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SIR G. C. LEWIS ON THE ASTRONOMY OF THE ANCIENTS.*

Of all the physical sciences, Astronomy is the most generally interesting in its early history, as well as in its future progress. The mechanism of the heavens, as displayed in the sun, moon, and stars, is the first problem which human reason labors to solve. The great luminary which lights and heats us, and gives life and beauty to fruit and flower, would, even if it appeared fixed in space, be the object of an intense and rational curiosity. But this curiosity is greatly enhanced when we follow him in his daily and annual movements. The ruler of day and night, the measurer of labor and rest, and the arbiter of times and seasons, the Sun could not fail to be associated with every thought and action of life; and when not worshiped as a god, must have been contemplated with gratitude and wonder. His daily disappearance beneath the horizon, whether of land or of sea, and his reäppearance undimmed on the following morning, must have aided the primitive astronomer in forming a more correct idea of the earth on which he lived. A circular plane, immovable in space, as it appeared to the eye, could not long be regarded as the figure of the earth. The nightly course of the sun proved that the circular plane must have had an under as well as an upper side, unless its pedestal had been perforated with a tunnel to allow the luminary to pass. But as soon as it was observed that the Sun rose and set at different points of the horizon, and that at every point of the circle a star rose or set, and consequently passed beneath the cir-

* *An Historical Survey of the Astronomy of the Ancients.* By the Right Hon. Sir George Cornewall Lewis. London. 1862. Pp. 528.

cular plane, it must have been placed beyond a doubt, that the Earth was a solid body suspended in space.

In grouping the stars into constellations, or simply marking the individuals of the groups, the primitive astronomer must have noticed that a certain portion of the firmament revolved round a point which had always the same position among the stars. The motions and phases of the Moon—the eclipses of these luminaries—the direct and retrograde motion of the planets among the stars—the occultations of the stars and planets by the Moon, and the phenomena of comets — must have been universally observed, and made the subject of anxious and interesting speculation.

When we contrast these celestial phenomena taking place apparently on the surface of the firmament, or at the same distance from the Earth, fixed in space, with the present acknowledged system of the universe—with the solar system advancing in space—with the more extended system of the comets, and with the sidereal system of stars and nebulæ—we can hardly exaggerate the interest with which we trace the steps by which such grand truths have been established.

At what results the earliest astronomers arrived, in what manner the true motions, and distances, and form of the heavenly bodies were deduced from their apparent motions, and distances, and forms, are topics of curious inquiry, which have exercised the talents of very distinguished writers.

The history of ancient astronomy, which presents many points of historical and physical interest, has been composed under very different influences. It may be written by the philosopher, in illustration of those mental processes by which profound and complex truths have been wrested from obscure data and imperfect observation, or established in opposition to individual prejudices and national superstition. It may be written by the astronomer in enthusiastic admiration of the phenomena which he described, and of the laws of nature which these phenomena establish; or it may be written by the scholar, whose critical skill and knowledge of ancient languages enable him to elaborate the opinions of individual astronomers, and ascertain their precise import as historical rather than as physical truths. From these different points of view, various histories of astronomy have been written and published. That of Weidler, which appeared in 1741, is merely an account of astronomers of all ages and countries, with a list of their works. The *History of Astronomy*, by Bailly, published in 1775, 1779, and 1782, is a popular and fascinating work, distinguished by its eloquence, but marred by groundless speculations respecting the antiquity of the Indian and Chinese astronomy. The *History of Astronomy*, by George Costard, Vicar of Twickenham, published in 1767, is little more than a collection of propositions and problems, in which astronomy is applied to geography, history, and chronology, interspersed with brief sketches of the history of the science. The next work on the history of astronomy is the elegant sketch of the science by La Place, appended to his *Systeme du Monde*, and entitled *Precis de l'Histoire l'Astronomie*, in five chapters, the three first of which relate to the astronomy of the ancients. It is in the great work, however, of Delambre, on *Ancient Medieval and Modern Astronomy*, that the future historians of the science will find a mine of information collected and analyzed by one of the most learned and accomplished astronomers of the present age. These various works did not supply the want which was felt in England for a popular history of astronomy. Mr. Narrien, of the Royal Military College, Sandhurst, was therefore led to compose his *Historical Account of the Origin and Progress of Astronomy*, forming on octavo volume of twenty-four chapters. Mr. Narrien regards his work as a convenient introduction to a treatise either on descriptive or physical astronomy, and as "holding an intermediate place with respect to the voluminous histories of MM. Bailly and Delambre."

The work of Sir George Lewis, to which we are about to direct the attention of our readers, is written with a different object from that of any preceding historian. The histories of Delambre, as he justly observes, were composed by an astronomer principally for the use of astronomers, and require a knowledge of modern mathematical astronomy. But as astronomy is conversant with subjects of daily observation and speculation, such as Chronology and the Kalendar, "its history has numerous points of contact with the general history of mankind, and concerns questions which interest a wider

class than professed astronomers, for whose benefit the existing histories have been mainly composed." It therefore appeared to the author, "that an attempt might be advantageously made to treat the history of ancient astronomy, without exclusive reference to physical science, and without any pretension on his part to that proficient and comprehensive knowledge of modern mathematical astronomy which some of his predecessors in the treatment of this subject have possessed."

Like several of his predecessors, Sir George begins with the astronomy of the Greeks, "as affording a firm footing to the historian," and afterward proceeds to determine how far they derived their knowledge from foreign nations. With this object in view, he divides his work into eight chapters, as follows:

Chapter I. Primitive Astronomy of the Greeks and Romans.
Chapter II. Philosophical Astronomy of the Greeks from the time of Thales to that of Democritus.
Chapter III. Scientific Astronomy of the Greeks from Plato to Eratosthenes.
Chapter IV. Scientific Astronomy of the Greeks and Romans from Hippocrates to Ptolemy, 160 B.C. to 160 A.D.
Chapter V. Astronomy of the Babylonians and Egyptians.
Chapter VI. Early History and Chronology of the Egyptians.
Chapter VII. Early History and Chronology of the Assyrians.
Chapter VIII. Navigation of the Phœnicians.

During the long period of five centuries which elapsed between Homer and Herodotus, (born 384 B.C.,) the Earth was regarded as a circular plane, surrounded by the heavens, which was a solid hemispherical vault. The ocean was supposed to flow round this plane as a horizon, and the stars to rise from and again set on the circle of water; and those who did not accept this rude idea from daily observing the diurnal reäppearance of the heavenly bodies, regarded the lower hemisphere as a cold and dark abode, communicating with the upper Earth only through the mouths of caves. It is difficult to believe that during so long a period of time such gross ignorance could have prevailed. However limited was the extent of the habitable earth in those early days, the positive fact that every advance upon its surface in any given direction disclosed a new circular plane, overpassing that which preceded it, ought to have established it as a truth, that the Earth was at least a rounded mass, disclosing more and more of its rotundity as the traveler advanced over its surface. The certainty, too, that the Earth must have had an under side, either solid or fluid, or both, should have led to the conclusion that the under would resemble the upper side, since every new advance on the upper side, showing its rotundity, proved that the part of the under side not previously discovered was rounded. We have no doubt, therefore, that the roundness of the Earth would have been discovered by actual observation, had not erroneous opinions been propagated by the poetry and mythology of the times.

The necessity of obtaining certain measures of time led to an accurate observation of the movements of the Sun and Moon. The alternate recurrence of day and night, as shown in the Sun's diurnal course, must have soon determined the length of a day, the fundamental unit in the measure of time. The study of the Sun's annual course, marked by the differences in the seasons, though of greater difficulty, must have led to the discovery of the Sun's annual course, or to the length of the year, and also to the determination of the equinoctial and solstitial points.

As many of the most interesting occupations of civil life depended upon the seasons, the division of the year into four parts was indicated by the wants of man, as well as by the aspects of nature. It is singular, however, that the Egyptians and the ancient Germans had only three seasons—spring, summer, and winter; and it is curious, as remarked by Sir George Lewis, that in our own language three of the seasons are denoted by Anglo-Saxon words, whereas the word autumn is borrowed from the Latin. Sir George accounts for this by remarking that autumn is a less definite season; but we can hardly admit that the ripening of the fruits of the Earth, and the beautiful decay and fall of the leaf, are not as characteristic of a fourth season of the year as the torpor of winter, the heat of summer, or the revival of nature in spring. "Beside the recurrence of the seasons," as our author observes, "there were certain special and local phenomena which returned at annual pe-

riods;" the Etesian winds for example, the migration of birds, and the inundation of the Nile.

From the earliest ages, time was measured by years. Homer often mentions a definite number of years. As Sir George remarks, each Hellenic city, in which his poems were read, must have conceived that the siege of Troy occupied ten tropical years, and that Ulysses had passed eight of the same years in the island of Calypso. "It is clear," he adds, "that from an early period there must have been a measure of the age of man. Husbands and wives must have known each other's age. Parents must have known the age of their children. Hesiod advises a man to marry about the age of thirty years, and his wife is to be nineteen years old at her marriage. The same early poet mentions a boy of twelve months and also of twelve years. Homer speaks of Nestor having outlived two generations, and ruling over the third. Hesiod says that the raven lives nine generations of man, the stag four generations of the raven, the crow three generations of the stag, the phœnix nine generations of the crow, and the nymph ten generations of the phœnix."

Solon measured the successive ages of man by ten periods of seven years each; the perfection of man's physical strength being in the fourth period, from 28 to 35, and the perfection of his intellect in the seventh and eighth, or from 49 to 63 years of age.

From these, and various other facts, Sir George considers it certain that the solar year, with its equinoxes and solstices, was rudely known to the Greeks at a remote period.

The lunar month of 30 days (29 days 12 hours 44 minutes) was known in the time of Homer and Hesiod, the year being 360 days, and the number of months 12. The lunar year, however, consisting of 12 periodical lunations of 27 days 7 hours 43 minutes, was 354 days 8 hours 48 minutes 36 seconds—11 days shorter than the solar year. It was, according to Macrobius, the common year of the Greeks, and it appears that the length of the month was, in conformity with this, only 28 days.

The Greek States had not only no calendar of time, but no common chronological era for fixing the relation of past events. The Trojan war was used by the Greeks for this purpose, and the foundation of Rome by the Romans. The era of Nabonassar was employed only for astronomical purposes. Among the nations bordering on the Mediterranean, a solar year of twelve lunar months was recognized from a remote antiquity; but still divergent or abnormal years are said to have been used by ancient nations; the Arcadians, a year of three months; the Carians and Acarnanians, one of six months; the Lavinians, one of 374 days; the early Egyptians, one of three or four months; and the ancient Romans, one of ten months, or 304 days, instituted by Romulus. Sir George Lewis considers most of the abnormal years as not having been really in use. The decimestrial year of the Romans commenced in March, and consisted of March, *April*, May, *June*, Quintilis, *Sextilis*, *September*, *October*, *November*, and *December*—those marked in Italics having 30 days, and the rest 31 days, or 304 in all. Numa is said to have reformed the year of Romulus by adding 51 days to make a year of 355 days. Two new months, January and February, were prefixed to the other ten; but as this new year was still 10¼ days too short, Numa brought it into harmony with the solar year by intercalating a month of 22 or 23 days in alternate years, which still made the year too long. After a long and able discussion of the discordant opinions of Plutarch, Livy, Macrobius, and other ancient writers, and of Niebuhr, Greswell, and others, on the Romulean year of 304 days, Sir George Lewis concludes "that it never had any real existence, and was merely a fiction, contrived to account for the numerical names of the Roman months."

At an early period, the Greeks had made observations on the fixed stars, and even given them names, and grouped them into constellations. Homer mentions the Pleiades, the Hyades, Orion, Bootes, and the Bear, which he says is also called the Wain. The Bear alone, of all the constellations, he says, is never submerged in the waves of the ocean, and keeps watch upon Orion. Hence, it would appear that the constellation of the Bear included all that part of the heavens which never sets, or that within what has been called *the circle of perpetual apparition*. Bootes is described as "tardily setting," and Sirius as the "Dog of Orion." Hesiod also mentions three stars and constellations, and

connects the different operations of the husbandman with their rising, setting, and culmination.

The planets do not seem to have been observed in early times. Hesiod refers to no planet. Venus, under the name of Hesperus, is mentioned by Homer and Sappho. The morning and the evening star were not identified till the age of Pythagoras. This supposed ignorance of the planets is a proof that we are not in possession of the early astronomical knowledge of the Greeks. It is impossible that the rudest observer could have seen Jupiter, Saturn, and Mars, in their direct and retrograde movements among the stars, sometimes in conjunction with each other, sometimes passing close to important fixed stars, and frequently suffering occultation by the Moon, without recording their observations, and endeavoring to explain them. We can not doubt, therefore, that the planetary astronomy of the Greeks has been lost.

Mr. Lewis concludes his first chapter by showing that the religion and mythology of the early Greeks had hardly any reference to astronomy or to the worship of the heavenly bodies, and that the divination of the same people had no connection with the heavenly bodies. Like other people, they viewed with alarm eclipses, comets, and meteors; but they had no system of astrology till they received it from the Chaldeans, after the time of Alexander.

After detailing in his second chapter the mythological stories of Atlas, Hyperion, Uranus, Palamedes, Chiron, Museus, and Nausicaa, Sir George Lewis proceeds to give an account of the discoveries of Thales, which he considers "the earliest historical name with which we can connect the scientific pursuit of astronomy in Greece." He is said to have flourished between 639 and 546 B.C., and to have predicted the total eclipse of the Sun, which put an end to the battle between the Medes and Lydians.* In a visit to Egypt, he is said to have obtained much astronomical and geometrical knowledge; to have measured the hight of the pyramids from their shadows; to have fixed the year at 365 days; and to have ascribed solar and lunar eclipses to their true cause. He is said also to have determined the ratio of the Sun's diameter to its apparent orbit, and to have found that the Moon's diameter was the 726th part of that of the Sun.

With such astronomical knowledge, it is difficult to reconcile other astronomical opinions which have been ascribed to him; such as that the Earth floated upon the waters like a ship—being too heavy to be supported by air—and that the fluctuations of the underlying water were the causes of earthquakes. It is obvious, therefore, as Sir George Lewis justly remarks, that Thales was not cognizant, as has been supposed, of the spherical form of the Earth. We can not, indeed, see any evidence of his having made a single step in astronomical discovery; and Sir George is of opinion that even "the connection of Thales with the eclipse is subject to greater doubts than the occurrence of the eclipse itself."

The alleged reform of the Athenian calendar by Solon, and the astronomical opinions of Anaximander, Anaximenes, Heraclitus, Xenophanes, Parmenides, Empedocles, Anaxagoras, and Diogenes of Apollonia, so well elaborated by our author, are hardly worthy of being extracted, from the contradictory testimonies of ancient writers. If genuine, they exhibit only the ignorance of their authors, and they do not constitute the smallest step to astronomical truth.

Although Socrates considered astronomical inquiries as a waste of valuable time, yet, in his day, a real reform of the calendar seems to have been introduced by Meton, an Athenian citizen, in 432 B.C. In the Greek year of 360 days, and in the reformed year of Solon of 354 days, the deviation from the solar year was so great, that an intercalation was necessary to keep in harmony the calendar and the seasons. In the earliest intercalation—namely, the biennial or *trieteric*—an additional month was inserted in every alternate year. The next intercalation was the octennial, or *octoateric*, which assumed very nearly the true length of the solar year—namely $365\frac{1}{4}$ days. Instead of determining the year as we do by the Sun, the ancients regulated its length by fixing the calendar months by the course of the Moon, and bringing the year thus obtained (354 days) into harmony with the solar year, by intercalary days. The deficiency of $365\frac{1}{4}-354=11\frac{1}{4}$ days, might have been made up, as is said to have been proposed by Eudoxus, by a *quadrennial* intercalation; yet

* This eclipse, according to Mr. Airy, took place on the twenty-eighth May, 585 B.C., when Thales was 54 years of age. See *Phil. Trans.* 1857, p. 179.

it does not seem to have been used in any Greek calendar. Athough, by multiplying $11\frac{1}{2}$ days by 4, we obtain 45, an even number of days, yet this would form only $1\frac{1}{2}$ lunar months; and as it would be desired, on grounds not only of convenience, but also of religion, to intercalate entire months, an *octennial* was preferred to a *quadrennial* period. Since, therefore, $11\frac{1}{4} \times 8 = 90$ days, or 3 months of 30 days, a month of 30 days was intercalated in the 3d, 5th, and 8th years, in order to bring the year of 354 days into close accordance with the solar year of $365\frac{1}{4}$ days.

Owing to the solar year being 365 days 5 hours 48 minutes 48 seconds, a deviation of 18 days from the Moon occurred in the course of a century, and this defect was cured by the Metonic cycle of 6940 days, divided into 19 years and 235 lunar months;* but though it made the months coïncide more closely with the Moon, it made the year agree less exactly with the Sun.

The Metonic cycle was generally used in Greece; and Dr. Whewell remarks, that it is so exact as to be still used in calculating the time of new Moon, for the time of Easter. The Greeks had, therefore, attained to great accuracy in determining the lengths of the lunar months and the solar year.

As Meton had taken the solar year at $365\frac{5}{19}$ days, $\frac{1}{76}$th of a day longer than the year of $365\frac{1}{4}$ days, Callippus proposed a new cycle of 76 years, quadrupling the Metonic period. Deducting one day from this, he reduced the solar year to the more accurate one in the octoateric cycle. The lunation was also more exact, so that the Callippic period, harmonizing more closely than the Metonic with the Sun and Moon, was used by scientific astronomers, but never applied by the Greeks to their civil calendar. It commenced 330 B.C.

A great step is supposed to have been taken in astronomy by Philolaus, a follower of Pythagoras, who flourished in the time of Socrates. We have no means of ascertaining whether the Philolaic system, supposed by many modern writers to be an anticipation of the Copernican, was a hypothesis which belonged to the disciple or to his master. At all events, we may consider it, as Sir George Lewis does, as the dogma of the Pythagorean school, about the end of the fifth century B.C. In this hypothesis, an invisible mass of fire occupies the center of the system, and is called the "hearth of the universe," "the watch-tower of Jupiter," "the altar of Nature," etc. Round this fire revolve ten bodies in circular orbits: at the greatest distance, the fixed stars; next the five planets, Saturn, Jupiter, Mars, Venus, and Mercury; then the Sun, then the Moon, and then the Earth; and then, solely to *make up the ten*, the Antichthon, a body nearer to the central fire than the Earth, and *invisible to the Earth's inhabitants*, like the central fire! To suppose such a system in any way resembling the Copernican, except in the fancy that the Earth is a revolving body, would be to do violence to astronomical truth. Another view of the Pythagorean doctrine, supported by Roth, a recent writer, is, that the Earth was the center of the system, with the fire in its center, and the Moon for the Antichthon.

The Pythagorean doctrine of the Music of the Spheres has a poetical interest. The planets were supposed to emit sounds from their different spheres, which were combined into a harmonious symphony: the Moon representing the grave end of the scale, the starry sphere the highest, and the most rapid of the spheres the acute end. The inaudibility of the sounds was ascribed to their having been constantly heard; and Cicero tells us that they were so loud, "as to transcend the capacity of our sense of hearing!"

The opinions of Leucippus, the founder of the Atomic philosophy, and of his friend and disciple Democritus, exhibit no advance toward truth. That the planets were placed between the Moon and the Sun, which was the most distant body from the Earth; that the Earth was a circular plane suspended in the center; and that lunar were more frequent than solar eclipses, because the orbits of the two bodies were unequal, are opinions ascribed to Leucippus, and hardly more ridiculous than those of his disciple Democritus, who converted the circular plane of his master into a hollow disk. It is some compensation, however, for this and other fancies, that he held the Sun to be an ignited mass of stone; the Moon a solid body, with mountains and valleys; and the other planets of the same constitution. He maintained the doctrine of a plurality of worlds, of different magnitudes, and at different distances from each other. In our author's

* Hist. Inductive Sciences, vol. i. pp. 128–132.

third chapter on the scientific astronomy of the Greeks, from Plato to Eratosthenes, we may expect to meet with facts well observed, and speculations of a somewhat inductive character. Plato appears to have maintained that the Earth was an immovable sphere, suspended in the midst of the universe; and there is reason to believe, from the celebrated passage in the Timæus, that he supposed it to revolve upon its axis. Mr. Grote* has recently maintained that the word *ειλλομενην* indicates that the Earth turns *with* the cosmical axis, like a joint of meat fixed upon a spit, and not *round* or *upon* it, as others had supposed. Sir George, however, considers the Greek word as meaning *revolving*, and understands from it, as Aristotle seems to have done, that the Earth turns round the axis of the world as a geometrical line.

Plato mentions seven planets: Lucifer and Hesperus, the morning and evening star, which he regards as only one planet, or Eosphorus, (Venus;) Stilbon, or Mercury; Pyroeis, or the Fiery, namely, Mars; Phaethon, (Jupiter,) the slowest planet but one; and Pheneus, (Saturn,) the slowest of them all.

Eudoxus, a mathematician and a geometer, executed a descriptive map of the heavens, in two parts; one called *Enoptron*, or Mirror, and the other, the *Phenomena*, or Appearances; and it continued to be used as a practical manual of sidereal astronomy till the sixth century of our era. He conceived the stars to be distributed into constellations, with recognized names, and he defined them in relation to the zodiac, and the tropical and arctic circles. Eudoxus takes no notice of the planets in these works; but he had the honor of giving the first theory of their motion, which at last assumed the form of the Ptolemaic system. He employed twenty-six revolving spheres for producing the complex motions of the planets — namely, six for the Sun and Moon, and twenty for the other five planets. The following are the periodic times of the planets:

	According to Eudoxus.	True Time.
Mercury,	... 1 year.	0 years 87 days 23 hours.
Venus,	... 1 "	0 " 224 " 16 "
Mars,	... 2 "	1 " 321 " 23 "
Jupiter,	... 12 "	11 " 315 " 14 "
Saturn,	... 30 "	29 " 174 " 1 "

The astronomical opinions of Aristotle have a high degree of interest, considering the vast number of subjects which he includes in his philosophy. In a spherical universe, the celestial bodies of a spherical form are fixed, moving only with the spherical orbs to which they are attached. From an occultation of Mars by the Moon, which he saw, he supposed that some of the planets were farther from the Earth than the Sun or Moon. Rejecting the absurd opinions of his predecessors, he shows that the Earth is at rest in the center of the universe. He infers the spherical figure of the earth from the eclipses of the Moon, and from the sphere being the form taken by matter gravitating to a center. He believes that its size is inferior to that of some of the other heavenly bodies, being, according to the mathematicians, four hundred thousand stadia in circumference.

Aristotle distinguishes comets from planets from their wandering beyond the zodiacal band; but he regards them as of the nature of meteors, and as existing in the region round the Earth. The Milky-Way, which Democritus had justly regarded as a collection of small stars, very near each other, was supposed by Aristotle to be of the nature of meteors.

Hicetas of Syracuse, probably a cotemporary of Plato, supposed that the diurnal motion of the Sun, Moon, and stars might be produced by the rotation of the Earth upon its axis. Heraclides maintained the same doctrine; but they both believed that it held its central position in the universe.

About the close of the fourth century B.C., astronomy had assumed such a state that histories of its progress were composed by Theophrastus and Eudemus, disciples of Aristotle. Without a motion of rotation or translation, the Earth occupied the center of the universe, while the Sun, Moon, five planets, and the fixed stars were carried round it, and attached to solid transparent spheres. The use of astronomy in agriculture, navigation, and war had been pointed out by Plato, and the Greeks were now studying it in its practical applications. Meton had placed a sun-dial on the Pnyx at Athens in 433 B.C., and by this instrument the day was divided into twelve parts, from sunrise to sunset—the length of the hours, as well as the day, varying with the seasons. As the dial was useless in cloudy weather, clepsydræ, or water-clocks, were used for

* Dissertation entitled, *Plato's Doctrine respecting the Rotation of the Earth.* London. 1860.

measuring time at night, or in the absence of the Sun. In these instruments, the time was measured by the flow of water from an orifice in a cylindrical vessel; and they were used in Athens, in the time of Aristophanes, for regulating the length of speeches in courts of justice. Plato is said to have used one for measuring time at night, and the first is said to have been erected in 159 B.C., in a public place in Rome. Some time later, in 140 B.C., Ctesibius erected a complicated clepsydra at Alexandria. Sun-dials, consisting of a hollow basin, and a gnomon, which cast its shadow on the hour lines, had been introduced into Rome from Sicily after the first Punic war, in 263 B.C., and an improved one by Philippus was set up in 160 B.C.

Astronomy was now treated geometrically by Autolycus and Euclid, in works still extant. Autolycus, who flourished 320–300 B.C., wrote a treatise "On the sphere in motion," and another "On the risings and settings of the stars." In the first, the Earth is placed in the center, and the apparent motion of the starry vault is explained upon this hypothesis. In the second, he treats of the true and apparent risings and settings of the stars. Euclid's treatise, entitled *Phenomena*, is of a more advanced character. The Earth is regarded as the center of the universe, and immovable, with the starry sphere revolving round it every twenty-four hours. All the stars move in parallel circles, and are attached to a single body, having, as their common pole, a star visible between the Bears, which never changes its place, but revolves upon itself. It seems strange that the results in this treatise should have required the genius of a Euclid to establish them.

Although a motion had been given to the Earth by Philolaus, Plato, and Hicetas, the idea had never been received by astronomers. The geocentric system, however, so universally adopted, appears to have been rejected by Aristarchus of Samos, who flourished from about 320–250 B.C. He maintained that the Sun and the fixed stars are immovable, the Earth revolving round the Sun in a circle, of which the Sun is the center. He seemed to consider the distance of the fixed stars as infinite; but Archimedes, to whom we owe our knowledge of the new system, thinks that this was not the meaning of the astronomer, and gives a different interpretation of the passage. In his system, no reference is made to the planets; and though he is said have given the Earth a rotatory motion also, it is a meager though a bold anticipation of the Copernican hypothesis. Its boldness, indeed, was such that Cleanthes, the head of the Stoical school at Athens, declared it to be impious to remove from its sacred and central position "the heart of the universe."

Archimedes, so well known by his discoveries in mechanics and optics, was known also as an astronomer. He is said to have constructed an orrery in brass, which showed the revolutions of the Sun, Moon, and five planets, and the nature of eclipses. From Syracuse, it was removed by Marcellus to the Temple of Virtue, at Rome.

Sir George Lewis closes this chapter of his work with an account of the astronomy of the Alexandrine school, so nobly patronized by the Greek kings of Egypt. Treatises on astronomy were written by Aristyllus and Timocharis in the middle of the third century B.C.; and both had made observations on the fixed stars, to which Hipparchus had access. Conon of Samos, a friend of Archimedes, made astronomical observations in Italy, and formed a collection of solar eclipses observed by the Egyptians. Berenice, the Queen of Ptolemy Euergetes, on his return from his Syrian expedition, in 243 B.C., had dedicated a lock of her hair in the temple of Arsinoe-Aphrodite, at Zephyrum; but having disappeared from the temple, Conon placed it in the heavens as the constellation *Coma Berenices*.

Eratosthenes, who flourished between 276 and 196 B.C., determined the circumference of the Earth by a method truly scientific. The distance between Syene and Alexandria, in the same meridian, had been ascertained to be 5000 stadia. The zenith distance between these stations was found by Eratosthenes to be the fiftieth part of the circumference of the meridian, or 7° 12′; and hence the circumference of the Earth was 250,000,000 stadia, or 31,000 miles, which is nearly 700 stadia for a degree. This eminent astronomer likewise found that the diameter of the Sun was twenty-seven times greater than the diameter of the Earth; the distance of the Sun, 804,000,000 stadia, and that of the Moon, 780,000 stadia.

Apollonius of Perga, a cotemporary of Archimedes, and celebrated by his treatise

on the Conic Sections, was the first to reject the theory of revolving spheres, and to introduce that of excentrics and epicycles, in order to explain by circular movements the stations and retrogradations of the planets.

We come now to the last and most interesting chapter of Sir George Lewis's survey—namely, the scientific astronomy of the Greeks and Romans, from Hipparchus to Ptolemy. The astronomical observations of Hipparchus were made between 162 and 127 B.C., but have not been recorded in any work of his own. Our knowledge of his discoveries is derived principally from the *Almagest*, or "Mathematical System" of Ptolemy. Advancing beyond Eudoxus, he determined the positions of the stars by their right ascension and declination. He discovered the inequality of the Sun, the place of its apogee, and its mean motion. He determined also the mean motion of the Moon, of its nodes and of its apogee, the equation of the Moon's center, and the inclination of her orbit. He discovered likewise a second inequality, without being able to ascertain its law. He calculated eclipses of the Moon, and was acquainted with the obliquity of the Ecliptic. His astronomical instruments were so imperfect, that it was difficult to approximate within a degree of the truth, though his errors amount frequently only to a few minutes. His hypothesis of excentrics and epicycles, by which he succeeded, in so remarkable a manner, in resolving the unequal motions of the heavenly bodies into equable circular motions, entitle him to a high place among astronomers. One of the most valuable works of Hipparchus is his catalogue of 1080 stars, with their latitudes and longitudes. In making these observations, he discovered the precession of the equinoxes, or an apparent motion of the fixed stars round the pole of the Ecliptic. Although this motion is only fifty seconds annually, yet Hipparchus announced that it was between fifty-nine and thirty-six seconds. In estimating the labors of this astronomer, Delambre says, that when we "reflect upon the number of his works, and the mass of calculations which they imply, we must regard him as one of the most astonishing men of antiquity, and as the greatest of all in the sciences which are not purely speculative."

During the three centuries which elapsed between Hipparchus and Ptolemy, astronomy made little progress. The astronomical treatises of Geminus and Cleomedes, and observations by Agrippa, Menelaus, and Theon of Smyrna, were written and made in this interval. About 105 B.C. Posidonius constructed an orrery for showing the daily motion of the Sun, Moon, and five planets. He computed also the circumference of the Earth by a method different from that of Eratosthenes, by which he found it to be 240,000,000 stadia, or 30,000 miles. He made the Sun's distance from the Earth 502,000,000 stadia, and the Sun's diameter 3,000,000 stadia; and he was the first person who recognized the relation of the tides to the motions of the Sun and Moon.

An important use of astronomy, and indeed of every branch of science, is to explain those phenomena of the material world which have a supernatural character. Solar and lunar eclipses, comets, and various atmospherical phenomena, are sufficiently rare and striking to alarm the timid and the ignorant. Sir George Lewis has given some interesting examples of the effects produced by eclipses. When Pericles was about to set sail on an expedition against the coasts of the Peloponnese, his troops and his own pilot were struck with terror by an eclipse which took place at the moment of embarkation. He instantly held up a cloak before the eyes of the pilot, and told him that the eclipse was no more a sign of calamity than the cloak—the only difference being, that the body which produced the eclipse was the larger of the two.

When the Athenians, about twenty years afterward, were about to send an expedition to Syracuse, the army, and Nicias the commander, were influenced by a lunar eclipse in preventing its departure. Although an expiration of three days was considered necessary for solar and lunar phenomena, yet Nicias made the army wait for a whole circuit of the Moon, or the thrice nine days of the diviners, till she was quite purified from her unclean embrace of the shadow of the Earth. "The moral," says our author, "which Polybius draws from this event, is the necessity of astronomical knowledge to a military commander. If Nicias, he says, had understood the true nature of an eclipse, he would have turned it to his own account; for he would have taken advantage of the fear and astonishment of

the enemy, whose ignorance of eclipses was equal to that of the Athenians, to withdraw his army and escape in safety." Columbus, more wise than the Greek commander, terrified to such a degree the Indians in Jamaica by the prediction of an eclipse, that he induced them to supply him with provisions for his crew.

In 364 B.C., when Pelopidas was about to march against Alexander of Pheræ, his army was intimidated by an eclipse of the Sun, and the expedition was discouraged by the diviners. A few volunteers and mercenaries, however, set out under Pelopidas, who lost his life in the adventure. A similar and more fortunate disregard of an eclipse of the Moon was made by Dion, in persisting in his expedition against Dionysius, in opposition to the fears of his soldiers, though with the concurrence of the diviners. An almost total eclipse of the Moon, which preceded the battle of Arbela by eleven days, would have produced a mutiny in the army of Alexander, had not the Egyptian diviners satisfied the soldiers that the Sun was the friend of the Greeks, and the Moon of the Persians, and therefore that an eclipse of the Moon forbode a defeat of the latter.* When the fleet of Agathocles was on its way to Africa, an eclipse of the Moon, which Mr. Airy makes that of the fourteenth August, 310 B.C., filled the army with consternation; but, as it had not happened before the departure of the expedition, it indicated only disaster to the Carthaginians.

The earliest authentic notice of a solar eclipse in the history of Rome, has been mentioned by Livy as having taken place 190 B.C., during the Apollinarian Games. About twenty-two years later, a lunar eclipse occurred during the campaign of Æmilius Paulus against Perseus, king of Macedonia, but of which the accounts differ. According to Levy, a tribune, Sulpicius Gallus, on the eve of the battle of Pydna, stated to the assembled soldiers that the Moon would be eclipsed on the night of the third September, from the second to the fourth hour; but that, as it was produced by natural causes, which he explained, it could not be considered a prodigy. The prophetic powers of Gallus were extolled by the Roman soldiers; while the Macedonian army and their diviners were so terrified by the omen, that their camp resounded with moans and shrieks till the Moon recovered her usual form. Although Gallus was able to calculate eclipses, yet Cicero thinks he had not leisure and the means of doing it, and must have wrought upon the minds of his soldiers after the eclipse had commenced.

When the Roman legions mutinied in Pannonia in 14 A.D., on the accession of Tiberius, an eclipse of the Moon terrified them to such a degree, that they strove to relieve the Moon's sufferings by the clattering of brass, and the noise of horse and trumpets. The superstition of the ancient Greeks was, that the Moon was bewitched; and it was supposed that the Thessalian women, who had the reputation of witchcraft, could draw her down from her course by magic incantations and herbs.

Notwithstanding these vulgar errors, the causes of eclipses were well known to the Greeks, as is proved by the treatises of Geminus and Cleomedes; but though Epicurus admitted that the Moon might be eclipsed in the Earth's shadow, and the Sun by the Moon, yet he held that an eclipse may have several causes — such as a partial extinction of the light of the Sun or Moon, or even by the interposition of some foreign body belonging to the Earth or to the heavens.

The calendar, being regarded as a religious concern, had been under the exclusive control of the College of Pontiffs. In order to bring the Roman year of 355 days into harmony with the Sun, an intercalation was necessary; but this was supplied by the Pontiffs, and, we are told, in such a dishonest manner, that "they falsified the time in order to favor or to spite particular magistrates or farmers of the public revenue, by unduly lengthening or shortening the term of their office or contract."

When Julius Cæsar was Pontifex Maximus, the Roman calendar was in such a state, that though January should have begun soon after the winter solstice, the errors had so accumulated as to amount to ninety days. He therefore rectified this state of matters by inserting the regular intercalary month Mercedonius, of twenty-three days, and two additional intercalary months, containing together sixty-seven days, which, added to the year of 355 days, made a transition year of

* Mr. Airy thinks that this eclipse was that of the fourteenth March, 479 B.C.—*Phil. Trans.* 1853, p. 199.

445 days. The month of January having thus regained its proper place, Cæsar ordered the solar year of 365¼ days to be adopted in future. To keep it in accordance with the seasons, he added a day to April, June, September, and November, and two days to January, Sextilis, and December, making the 355 days up to 365 days; and he provided for the quarter of a day still wanting by the intercalation of a day in every fourth year.

Although Julius Cæsar was an adept in astronomy, and is said to have written a treatise on the motions of the stars, yet, in reforming the calendar, he availed himself of the assistance of Sosigines, an astronomer of the Alexandrine school, and of a Roman clerk of the name of Flavius. Simple as is the intercalation of a day every four years, yet it was neglected, and the intercalation made only every third year. The consequence of this was, that Augustus was obliged to suspend the intercalation of three periods, or twelve years, so as to absorb the three days in advance. The difference between the Julian year of 365¼ days, and the true solar year of 365d. 5h. 48m., was still 11′ 12″; and as this had accumulated in 1581 to ten days, Pope Gregory provided that three intercalary days should be omitted every four centuries; and this is the calendar now in use.

Notwithstanding the perfection of a calendar as a measure of annual time, the sun-dial and the clepsydra, for measuring diurnal and nocturnal time, were very imperfect, and were to be found chiefly in monasteries rich enough to purchase them. In the poorer establishments they had a *significator horarum*. In order to discharge this duty properly, this marker of time was cautioned "not to listen to stories, or to hold long conversations with any one, nor to inquire what is done by persons engaged in secular pursuits. He must be always intent upon his duty, and never relax his observation of the revolving spheres, the motion of the stars, and the lapse of time. He must acquire a habit also of singing psalms, if he wishes to possess the faculty of distinguishing the hours; for, whenever the Sun or stars are obscured by clouds, the quantity of psalms which he has sung will be a sort of clock for measuring time." In other monasteries the time was measured by the diminution of a lighted *cereus*, or wax taper. Clocks driven by weights and wheels, and striking the hours, were not introduced till the eleventh or twelfth century, and the pendulum-clock of Huygen not till the seventeenth.

No part of astronomy perplexed the early astronomers more than the place and relative position of the planets. The difference between the three superior and the three inferior planets had been noticed, and the sun was placed between them: the order being—Saturn, Jupiter, Mars, Sun, Venus, Mercury, and the Moon. After they attained to this arrangement, a new hypothesis not mentioned by Ptolemy was invented, in which Venus and Mercury are made satellites of the Sun, and move round him, while all three move round the Earth. This hypothesis must have been known early after Christ. It is found in the work of Vitruvius, in that of Martianus Capella, and in the astronomical treatise of Theon of Smyrna. It coïncides nearly with the Tychonic System of more recent times, in which the Earth is immovable in the center of the universe, with the Sun, Moon, and fixed stars revolving round it, while the five planets revolve round the Sun, the three superior ones surrounding the Earth, and the two inferior ones lying between the Earth and the Sun.

We have already had occasion to refer to Ptolemy and his great work, entitled *The Mathematical System*, or *The Almagest*. Claudius Ptolemy, who flourished between 100 and 170 A.D., was a native of Egypt, and resided at Alexandria. Having had access to the writings of Hipparchus, and being acquainted with the observations and works of the Greek and Alexandrine astronomers, he was able to enrich his *Almagest* with all the theoretical and practical information of his predecessors. In this great work, consisting of thirteen books, of which Delambre has given an abstract, occupying nearly 350 pages, he treats of the Sun and Moon; of eclipses; of the stars, their catalogues and distances; of the planets, and their retrogradations and latitude; and of the Milky-Way, and the sphere; forming almost a complete system of astronomy. He considers the Sun, Moon, and all the planets as moving round the Earth—the order of their distances being, the Moon, Mercury, Venus, the Sun, Mars, Jupiter, and Saturn. Each of the superior planets also moved upon an epicycle, whose center described round the Earth an excentric in a time

equal to the revolution of the planet. The period upon the epicycle was a solar revolution, and the planet was always in opposition to the Sun when it reached the point of the epicycle nearest the Earth. Each of the inferior planets also moved upon an epicycle, whose center described an excentric round the Earth; but the motion of this point was equal to the solar motion, and the planet described its epicycle in the time corresponding to its present revolution round the Sun, being always in conjunction with him at the lowest point of its epicyle. In this system there was no way of determining the absolute magnitude of these cycles and epicycles, so that the variations in the distances of the planets were not represented in it. Ptolemy knew very little of these variations, owing to the difficulty of measuring the diameters of the planets; but his observations on the Moon might have shown him his mistake in supposing that the perigeal diameter of the Moon in quadrature was nearly double that of her apogeal diameter in the syzigies. Every new inequality, as La Place observes, discovered by observation, loaded the system with a new epicycle, so that every step in astronomy, in place of confirming it, rendered it more and more complicated, and proved that the system was not one of nature.

The most important discovery of Ptolemy was that of the lunar inequality called the Evection. Hipparchus had observed great Anomalies in the Moon's motion in her quadratures, and Ptolemy having studied them with care, determined their amount and their law. Ptolemy confirmed the discovery of the motion of the equinoxes made by Hipparchus. By a comparison of his own with ancient observations, he proved the immobility of the stars, their latitude being nearly constant below the Ecliptic, and their motion in longitude being only a degree in eighty years, as Hipparchus had conjectured. In reference to the fixed stars, Ptolemy made a great step beyond his predecessors. Observing no parallax in the stars, and that the plane of the visible horizon cut the celestial sphere into two equal parts, he concluded that the diameter of the Earth was infinitely small in comparison with the distance of the stars. It has been generally thought that Ptolemy's Catalogue of the Stars, which forms the Seventh Book of his *Almagest*, was nothing more than that of Hipparchus reduced to his time, by means of a precession of the equinoctial points of a degree in eighty-four years. But this is a charge without any solid foundation. Ptolemy tells us distinctly that he observed the stars contained in his Catalogue, even to those of the sixth magnitude; and it would require very strong evidence to justify so serious an imputation upon the truth and honor of so great a man. But astronomy is not the only science which owes obligations to Ptolemy. His collection of the longitudes and latitudes of all places known in his day—his treatises on music, chronology, gnomonics, and mechanics—but, above all, his optics, evince the extent of his knowledge, and place him high in the lists of astronomy and philosophy. His work on optics, which has been discovered only in our own day, is a remarkable production. A Latin translation of it was found in the Royal Library of Paris; and, though mentioned by La Place, was first made known by Humboldt. It consists of five books, the first of which is wanting, but which treated of the relation between light and vision. The other books treat of various parts of optics; but the last book is the most interesting of all. It contains physical experiments, so well made, as to have no parallel among the ancients; and he gives a theory of astronomical refractions more complete than that of any author previous to Cassini.

In his fifth chapter, "On the Astronomy of the Babylonians and Egyptians," Sir George Lewis discusses very ably the claims which have been so strongly urged by many ancient writers in favor of the high antiquity of the Babylonian and Egyptian astronomy. That the Chaldean and Egyptian priests were the originators and inventors of astronomy and geometry; that their astronomical observations include periods of hundreds of thousands, nay myriads, of years; and that the Greeks who visited Egypt derived all their knowledge — astronomical, chronological and geometrical — from the Egyptians, are opinions maintained by many ancient writers, and believed, we fear, even by some modern speculators. Sir George Lewis disposes of these extravagant opinions in the following manner:

"The true character of both of the Babylonian and Egyptian priests as astronomers seems to have been, that from an early period they had, induced by the clearness of their sky, and by their seclusion and leisure—perhaps likewise

stimulated by some religious motive—been astronomical observers. Their observations were rude, and unassisted by instruments; and were, doubtless, but irregularly and imperfectly recorded. It may be reasonably suspected that they were directed particularly to phenomena, such as eclipses, to which a superstitious interest attached. We can not, consistently with the capacity and tendencies of the Oriental mind, suppose that either of these nations ever rose to the conception of astronomy as a science; that they treated it with geometrical methods; or that they attempted to form a system of the universe founded upon an inductive, or even upon a speculative basis. The knowledge of geometry ascribed to the Egyptians seems merely to have grown out of their skill in land-measuring. All the extant evidence goes to prove that the scientific geometry of the Greeks was exclusively their own invention. It may be doubted whether any Chaldean or Egyptian priest had a mind sufficiently trained in abstract reasoning to be able to follow the demonstrations of the properties of the conic sections invented by Apollonius. They furnished to some extent the raw material of observation, but the Greeks converted these indigested facts into a system."

But though the Egyptians made little progress in scientific astronomy, yet they seem to have made some steps in reference to the calendar and the division of time. In the time of Herodotus, the Egyptian year consisted of 360 days, with five intercalary days, making a year of 365 days; but as they seem not to have disposed of the odd one fourth of a day, their year was less accurate than that of the Greek octaeteric cycle. The canicular or Sothiac period of 1461 years, commencing at the heliacal rising of the dog-star, and to which so much importance has been attached by some modern writers, is, in Sir George Lewis's opinion, an imaginary cycle never used in practice, and apparently of late origin, though founded on a simple computation, which rests exclusively upon a comparison of the year of 365¼ days with that of 365 days. "What this cycle really attests," he adds, "is the retention of a civil year of 365 days, after it was known that the true year was longer by a quarter of a day."

The origin of the signs of the Zodiac has been generally ascribed to the Egyptians; but it has been satisfactorily shown by recent authors that it was introduced into Egypt by the Greeks in the Alexandrine age. "Much mystical erudition," says Sir George Lewis, "has been bestowed on the origin of the signs of the Zodiac; but by the researches of Letronne and Ideler, the subject has been withdrawn from the transcendental region, and reduced within the bounds of general knowledge. A huge frost-work edifice of fanciful conjectures has been melted by Letronne's determination of the date of the Zodiac of Tentyra to the reign of Nero."

But whatever was the amount of the Chaldean astronomy, their astronomers practiced the art of divination. The planets and certain stars were supposed to preside over the birth of individuals, and to shed a blessed or a malignant influence over their future life. The astrology founded upon this idea was introduced into Egypt, and also taught to the Greeks, from whom it passed into Italy and Rome. The influence of the planets, etc., over individuals was extended to nations. The fortunes of Rome were calculated from its natal day on the twenty-first of April; and the nativity even of the world was brought within the range of astrology, by supposing that the sign Aries was on the meridian at the creation!

The astrology of the Chaldeans was the more readily diffused in Greece and Italy from several causes, the most powerful of which, according to Sir George Lewis, were its resemblance to the meteorological astrology of the Greeks, their belief in the conversion of the souls of men into stars, the cessation of oracles, and the belief in a tutelary genius. Both the Greeks and the Chaldeans foretold the weather from the appearance and disappearance of certain stars. The Chaldeans held that the various phenomena of the weather returned during a period of twelve solar years. "The astrology as practiced in the first centuries of the Roman Empire was," as Sir George Lewis remarks, "an intricate and abstruse system. Its professors were popularly called mathematicians, and it involved more reasoning, and demanded more constructive ingenuity, than the modern pseudo-sciences of phrenology and homeopathy."

We regret that our narrow limits will not permit us to follow our author, at any length, from his survey of the astronomy of the ancients, through his interesting and valuable chapters on the Early History and Chronology of the Egyptians and Assyrians, which occupy more than a third part of his volume. It is impossible to overestimate the importance and value of his researches on this subject, and espe-

cially at the present moment, when so many attempts have been made to unsettle the chronology of the Bible. In this discussion, Sir George commences with a period of Egyptian history of one hundred and forty-five years, (670 to 520 B.C.,) from the conquest of Egypt by Cambyses to its annexation to the Persian empire, during which the successions of its sovereigns appear to rest on historical grounds. This period includes,

Psammeticus,	670–616 B.C.	Apries,	595–570 B.C.
Neco,	616–600 "	Amasis,	570–526 "
Psammes,	600–595 "	Psammenitus,	526–523 "

In inquiring into the Egyptian chronology anterior to the reign of Psammeticus, Sir George Lewis draws his information from Herodotus, Plato, Manetho, Eratosthenes, and Diodorus, all of whom profess to derive their knowledge from the same source—from the sacred books, from authentic registers of the native priests, and from oral communication with the priests themselves. After giving a full account of these barren chronologies, in which only a very small number of historical notices are to be found, Sir George compares them together, in order to determine their credibility. The result of this comparison is, that the accounts are entirely discordant, and can not be reconciled by any legitimate method. He can find no good reason for preferring one to another. He does not suppose that the priests intentionally deceived the historian, or that their information was incorrectly reported or transcribed; and having, therefore, no sufficient reason for selecting any one of these systems, *he is compelled, by the laws of historical evidence, to reject them all!*

This want of credibility is specially evinced by many of the puerile facts and fabulous stories which these narratives contain. In Manetho's narrative, Menes is said to have been torn in pieces by a hippopotamus, which is a herbivorous, and not a carnivorous animal. Under Neperchores, the waters of the Nile were for eleven days mixed with honey, and there was a preternatural enlargement of the Moon! Sesostris was five cubits high; and under Bocchoris a lamb spoke, and is said by Ælian to have had eight feet and two tails!

Several writers, ancient and modern, have endeavored to give credibility to these discordant narratives, in order to palliate their extravagant character, or to make the Egyptian chronology harmonize with that of the Old Testament. This has been done by supposing that the Egyptian year was anciently a single circuit of the Moon; and in more recent times, that it was four months. The hypothesis that it consisted only of a day is still more unfounded. Sir John Marsham reduces the Egyptian periods by arranging successive dynasties in parallel lines, and gets rid of a portion of time by making the reigns cotemporary.

The method of transmuting the Egyptian chronology adopted by Baron Bunsen, in his recent work on Egypt, is avowedly the same as that which Niebuhr applied to Roman history. From the discordant versions of this history given by different classical writers, Niebuhr reconstructed a new historical narrative on an arbitrary hypothetical basis of his own, producing unsound results "by ingenious conjecture, bold and startling combinations, specious analogies," and by "the display of imposing paradox and dazzling erudition." But whatever advantages this method possessed in the transmutation of Roman antiquity, where we have at least a full and continuous narrative, it is wholly inapplicable to ancient Egyptian history, which, as we have seen, consists of little more than chronology, or a string of royal names. "In this most unattractive field of hypothetical speculation," as Sir George Lewis well remarks, "the historian is condemned to make bricks without straw. Instead of demolishing and rebuilding constitutions, instead of creating new states of society out of obscure fragments of lost writers, he is reduced to a mere arithmetical process. Accordingly, the operations of Bunsen and other modern writers upon the ancient history of Egypt, rather resemble the manipulation of the balance-sheet of an insolvent company by a dexterous accountant, (who, by transfers of capital to income, by the suppression or transposition of items, and by the alteration of bad into good debts, can convert a deficiency into a surplus,) than the conjectures of a speculative historian, who undertakes to transmit legend into history."

Sir George goes on to show that the Egyptologists set at naught the ordinary rules of evidence, and make the most unbounded demands upon our credulity. "Under their potent logic all identity disappears; every thing is subject to become any thing but itself. Successive dynasties

but cotemporary dynasties; one king becomes another king, or several other kings, or a fraction of another king; one name becomes another name; one number another number, and one place another place!"

In order to illustrate Bunsen's system of reconstruction, Sir George takes, as an example, Sesostris, the greatest of Egyptian names, whose historical identity is dissolved and recompounded by the Egyptologists. Bunsen identifies *one portion of him* with Tosorthus, (Sesorthus of Eusebius,) the second king of the third dynasty, *who lived* 1799 *years later!* He then identifies *another* portion of him with Sesonchosis, a king of the twelfth dynasty; and "a third portion of Sesostris is finally assigned to himself!"—the great sovereign being thus reconstructed from his three fragments. Lepsius, the other famous Egyptologist, differs in many respects from Bunsen—the one assigning Sesostris to the *old*, and the other to the *new* empire, at dates differing 3793 years!—but "agrees with him in thinking that Sesostris is not Sesostris." "What should we think," says Sir George, "if a new school of writers on the history of France, entitling themselves Francologists, were to arise, in which one of the leading critics were to deny that Louis XIV. lived in the seventeenth century, and were to identify him with Hercules, or Romulus, or Cyrus, or Alexander the Great, or Charlemagne; while another leading critic of the same school, agreeing in the rejection of the received hypothesis, as to his being the successor of Louis XIII., were to identify him with Napoleon I., or Louis Napoleon?"

After some justly sarcastic observations on the attempt of Bunsen and Lepsius to discover the builder of the third pyramid, Sir George gives the following admirable description of an Egyptologist: "His imagination is captivated with the faculty of creating or annihilating dynasties by a stroke of his magic pen; he becomes, in the language of the ancient astrologers, a 'chronocrator.' He likewise appears to possess a sort of reflex second-sight, by which he is able to look back into the unknown past, and discern images invisible to ordinary eyes. He can evoke a great medieval period of antiquity, which has hitherto been wrapped in oblivion. If his pretensions to these gifts are admitted, and if he succeeds in imposing on the credulity of his readers, by his familiar handling of subjects remote from ordinary studies, he is regarded as a historical seer, elevated far above those obscure chroniclers who occupy themselves with digesting the occurrences of well-attested history."

Having shown the absurdity of the supposition, that the Egyptians had an ancient indigenous literature, which has perished, and to which the ancient writers had access, Sir George proceeds to examine the support which the Egyptologists draw from the hieroglyphical inscriptions on ancient Egyptian buildings, admitting that if these inscriptions were made by public authority, contained a record of cotemporary events, and were written in a language which could be read and interpreted correctly, they would furnish a solid basis of trustworthy history and chronology. None of these qualities, however, are found in the hieroglyphical inscriptions, of which we have three different accounts by authors cotemporary with the inscriptions. All these agree in describing the system as idiographic, and not as alphabetical; whereas Champollion, the great founder of the scheme of hieroglyphical interpretation employed by the Egyptologists, maintains that the hieroglyphs are symbols, not of ideas, but of alphabetic sounds. In adopting this view, therefore, Bunsen rejects the only positive evidence which we have from antiquity. As the tradition of the language is lost beyond recovery, an attempt has been made to find the ancient Egyptian, in the modern Coptic, written in Greek letters; but even Schwartz, who believes the Coptic to have been the language of the ancient Egyptian priests, admits the difficulties of such a hypothesis. "The remains of the Coptic," as Sir George observes, "do not descend beyond the third century of our era, are exclusively of an ecclesiastical character, and belong to a sphere of ideas from which the ancient religion and polity of Egypt are altogether excluded.

But whatever view we take of these points, the historical knowledge derived from hieroglyphic inscription is meager and of small amount. We have certain names of kings, but no coherent chronology, and no events in their reigns. If the interpretations which have been given of the hieroglyphical writings are correct, we may take them, as our author observes, as a sample of the rest, and may be assur-

ed that there is nothing worth knowing. "The work," he adds, "of Sir Gardner Wilkinson upon ancient Egypt, which speaks to the eye, is far more instructive than the efforts to address the mind through the restored language of the Egyptians. It may be feared that the future discoveries of the Egyptologists will be attended with results as worthless and as uncertain as those which have hitherto attended their ill-regarded and barren labors."

In order to see how far the accounts of Assyrian antiquity favor the hypothesis of the existence of scientific astronomy at Babylon, in remote times, Sir George Lewis, in his seventh chapter, gives us the early Assyrian history according to Herodotus, Ctesias, Berosus, Syncellus, and Eusebius; and he shows that there is such a discordance in their accounts, that it is impossible to institute any comparison between them. The points of agreement are so rare, that they appear to relate to different countries — "differing in the duration of the empire, the time and mode of its foundation, the time and mode of its overthrow, the names of the kings, their acts, and the duration of their reigns." Fruitless attempts have been made to harmonize these accounts, by supposing a double Assyrian empire in relation to time, and a double Assyrian empire in relation to space — one with its capital at Nineveh, and another with its capital at Babylon.

The earliest king of Assyria mentioned in the Old Testament is Phul, who lived about 772 B.C. His successors named in Scripture (though the reigns may not be continuous) were the following:

Phul,	772 B.C.
Tiglath Pileser,	741 "
Shalmaneser,	722 "
Sargon,	— "
Senna-herib,	714 "
Esarhaddon, his son,	— "
Baladan, king of Babylon,*	709 "
Nebuchadnezzar,	605–56 "
Evil Merodach, his son,	561 "
Belshazzar, last king of Babylon, dethroned in	538 "

Sir George Lewis terminates this most interesting and instructive chapter by a discussion of the evidence as to the duration of mankind, furnished by the existence of great works executed in Assyria and Egypt before the time of Herodotus; and he concludes that a long period of time is not necessary to account for their construction, and that there is sufficient reason for placing those in Egypt, and the walls of great buildings in Babylon, at a date anterior to the building of the Temple of Solomon, 1012 B.C. "The conjectural arguments," he adds, "founded upon uncertain astronomical records, by which a high antiquity is assigned to the Earth, have been rejected by Cuvier, and are now generally abandoned. Many of them have been examined in the course of the present treatise, and have been shown to be destitute of foundation."

We greatly regret that our limited space will not allow us to give more than a brief notice of Sir George Lewis's last chapter on the navigation of the Phœnicians. With the same varied learning and acute criticism which he has displayed in the previous chapters, he has shown that the Phœnicians had sailed to a very small distance beyond their settlement at Gades, and that there is no foundation for the opinion that they had navigated the shores of the Atlantic to obtain tin and amber from Northern Europe, to supply the nations at the eastern extremity of the Mediterranean. Britain was no doubt the country from which the tin sold by the Phœnicians to the Greeks was principally obtained; but, in place of its having been carried to Gades along the Atlantic coast, it was sent by the overland route across Gaul, and shipped by the Phœnicians from the mouth of the Rhone. A similar argument in favor of the distant Phœnician voyagers, derived from the early use of amber, is similarly disposed of by our author. The trade with the southern shores of the Baltic, where amber is found, in place of being carried on by Phœnician ships through the Sound, was carried on by land by native traveling merchants to the Mediterranean at Marseilles. The alleged voyage of Pytheas to the Ultima Thule, which favors the idea of a Phœnician trade by sea with the northern shores of Europe, is shown to be a fiction; and the same stigma is fixed upon the celebrated circumnavigation of Africa by Neco, as recorded by Herodotus, and as giving probability to the opinion that the Phœnicians had not only sailed to the amber shores of the Baltic, but had reached even America.

In concluding his fourth chapter on the scientific astronomy of the Greeks and Romans, Sir Georges institutes a comparison between the Geocentric and the

* A cotemporary of Hezekiah, 725–696 B.C.

Heliocentric, the Ptolemaic and Copernican, systems of the universe; and we regret to say that we can not concur in the views which he has expressed:

"The Copernican system of the universe," he observes, "and its subsequent completion by the Newtonian theory of universal gravitation, have had a purely scientific value, and have exercised scarcely any influence on the affairs of mankind. . . . . The annual measure of time has received no improvement since the modern astronomical revolution. With regard to the determination of a ship's place at sea by astronomical methods, the invention of chronometers has been far more important than any improvement in astronomical theory. If the ancients had known the telescope and the clock, their scientific methods would have sufficed for nearly all practical purposes, although they might have held to the Geocentric hypothesis. Astronomy, as it has been developed by Copernicus, Kepler, and Newton, and their modern successors, has been treated by mathematical methods requiring the highest stretch of the reasoning faculty, and has furnished materials for sublime contemplation. But it is a science of pure curiosity; it is directed exclusively to the extension of knowledge, in a field which human interests can never enter. An attempt has been made by some astronomers to distinguish between the solar system and sidereal astronomy; but the distinction rests on no solid foundation. The periodic times of Uranus, the nature of Saturn's ring, and the occultations of Jupiter's satellites, are as far removed from the concerns of mankind as the heliacal rising of Sirius, or the northern position of the Great Bear. Science ought, indeed, to be pursued for its own sake; and the human mind can be worthily occupied in the acquisition of knowledge which can never lead to any practical result. But if the astronomical science of the ancients was less exact and comprehensive than that of the moderns, it had a closer bearing upon human affairs, and it nearly exhausted those departments which are useful to mankind."

In these paragraphs there are three propositions which have greatly surprised us, and which we regret chiefly on account of the influence which their general acceptance must have on the future patronage, not only of astronomy, but of every other science:

1. That the ancient astronomy had a closer bearing than the modern on human affairs, and had nearly exhausted what was useful to mankind.

2. That the modern astronomy exercises scarcely any practical influence on the affairs of mankind, and is a science of pure curiosity, in a field which human interests can never enter.

3. That there is no solid distinction between the solar system and sidereal astronomy.

In this comparison of ancient with modern astronomy we can not concur. The only practical result of the ancient astronomy was the partial reformation of the calendar, which it took them more than two thousand years to effect; for the complete solution of the problem was not obtained till the Copernican system was announced. But what a meager boon to society was this, compared with the advantages which navigation and geography have derived from the perfection of the solar and lunar tables, and even from those of the planets. It was to promote these great practical purposes that the observatory of Greenwich was founded, and that rewards were given by the British Government to Euler and Tobias Mayer as the improvers of the lunar theory. If human interests are no longer concerned in the advancement of astronomy, how can we justify the Government for supporting with the public money that noble institution at Greenwich, which has done such valuable work, and is still doing it under Mr. Airy, one of the most gifted astronomers of any age or country? It requires some courage to say that there can be any science into which *human interests can not enter*. How often have we seen that the speculations of one age have become profoundly practical in another; and, were it otherwise with astronomy, the large sums now devoted to its advancement by every Goverment in the Old and New Wold should be transferred to those more important sciences in which human interests and affairs are supposed to be more deeply embosomed.

The allegation of our author, that there is no solid distinction between the solar system and sidereal astronomy, it is difficult to understand. Does it mean that the planets and fixed stars occupy the same region in space, or simply that stars are planets, and planets stars? The sidereal universe is placed at an immeasurable distance beyond the solar system, and no material bodies but the comets enter into the vast space which intervenes. It has been proved by the grand discoveries of the two Herschels, and others, that there are binary systems among the stars, in which one star revolves round another in determined periods, and to which the law of gravity extends; and it is not less true, from the observations of Mayer, Sir W. Herschel,

Struve, and others, that the whole solar system is in motion round some distant body, in the starry sphere. If these are truths, the sidereal system of the universe, our own planetary system which it incloses, and the great system of comets, which seems to form with both a chain of communication, are distinctly marked spheres of creation, which the highest intellects will not fail to study, and from which the warmest and most enduring interests of humanity can never be dissociated.

We have thus endeavored, at a very humble distance, to follow Sir George Lewis in his survey of the Astronomy and Chronology of the Ancients, limiting ourselves to a brief and simple abstract of the more important or popular topics to which he calls our attention. Our readers must peruse the work itself to form an idea of the stores of learning it contains, the ingenious and profund criticisms which characterize it, and the sound conclusions at which its author usually arrives. But, independently of the value of this work in its literary and scientific relations, it will be read with an additional interest as the production of one of the ablest and wisest of our modern statesmen. We have often had occasion to remark in these pages how rarely men of profound acquirements in literature and science have been called to discharge any public functions under Government, either of a diplomatic or administrative nature; while in foreign countries, and under arbitrary governments, the same class of men have been extensively employed. We have expressed our surprise that men of theoretical and practical talent have not found their way into the House of Commons, where great questions of practical science and national interest are to be decided, and where wisdom without eloquence is one of the highest qualifications of a legislator. Sir George Cornewall Lewis is one of the few examples of a public servant yoked in the harness of the State, and successfully pursuing the higher studies of literature, politics, and philosophy. The calm dignity and unswerving consistency with which he has discharged the less responsible duties of official life, and the reputation he has acquired as a scholar and philosopher, have raised him to several of the highest positions in the Cabinet; and we have no doubt that, in the bright roll of public men, to whom Providence has committed the destinies of England, there will not be found a wiser and a safer pilot to conduct the vessel of the State through the perils which have for some time been looming in the horizon of our country.

From The Leisure Hour.

WHAT IS THE SUN MADE OF?

If that question had been proposed to any chemist, naturalist, or astronomer, twenty years ago — ay, ten, or even less — the reply might have been: "Who knows?" If the chemist, naturalist, or astronomer, had been further questioned as to his belief whether science of any kind might not probably some day inform us of the Sun's composition, he would have assuredly answered: "No!"

To have replied otherwise, indeed, would have seemed unsound and ignorant. With what reason could it have been expected that any portion of the Sun's materials would reveal their composition to mortal sense? The Moon's composition would have seemed a far more promising subject of inquiry. Occasionally, aërolites or metallic masses fall to us from above. Whence they come is still uncertain. According to one theory, they are assumed to have originally belonged to the Moon, and to have been thence projected by volcanic eruptions, so far as to come within reach of the Earth's attraction. Many of this class of

bodies have been collected and analyzed. Their constituents have been made known through the direct evidence of chemical analysis; therefore — only granting their lunar origin—a portion of the Moon's constituents will have been revealed. I am aware that most of these aërolites are now supposed to belong to fragmentary asteroids coursing in planet-like orbits through our solar system; but the very fact of their having been taken for lunar productions shows that the materials of the Moon's structure were not deemed wholly beyond our observation or comprehension. These fragments only were thought to confirm our conclusions as to the Moon's physical structure as observed by the telescope.

But as for the Sun — ninety-four millions of miles away — there seemed no hope that we should ever succeed in making a closer chemical acquaintanceship with him. This has been effected, nevertheless; and, without giving a detailed narrative of how it has been effected, we shall do well to contemplate the bonds of union and acquaintanceship — so to speak—that subsist between the Sun and ourselves.

Firstly, we maintain a bond of acquaintanceship with the Sun through the intervention of the light that emanates from him; and this we may denominate the bond of popular acquaintanceship. Between our great luminary and the philosopher there is another bond of acquaintanceship —the force of gravitation. Whereas, however, any considerable knowledge of the laws of gravitation requires close study, a considerable knowledge of the properties of light is forced upon us willingly enough, by the very construction of our eyes, and the necessities of our existence. Astronomers, long ago, reasoning upon facts to which their experiments led them, came to the conclusion that the Sun — regarded as a whole — is lighter, size for size, than the Earth — only about a fourth of the Earth's weight, indeed. To put the case in another way: assuming that the whole materials of the Sun could be intimately mingled, so as to yield an average, and, then, a piece cut out of the Sun exactly as big as our Earth, such piece would only weigh about one-fourth of that our own planet weighs. To explain in what manner the weighing of the Sun has been effected, would be altogether impossible in a short paper like this. The weighing has been accomplished, however, and accomplished through gravitation: and this, until very recently, was all we knew in regard to the composition of the Sun. Whether it were made up of materials wholly different from those of our planet, or whether of materials identical in nature with some of those of which the Earth is composed, was beyond the scope of human ken, and seemed likely to remain so. The lighter weight of the Sun conveyed no information as to the nature of the materials. The proportional weight of the same thing varies according to the amount of heat it has. For example, metals, the very heaviest class of bodies, can by the aid of sufficient heat be driven into vapor, and vapors, as we all know, are characterized by their lightness. So, it might be that the Sun was composed of materials naturally heavy, but expanded to lightness by heat; or it again might be, that the Sun was composed of materials naturally light — light, that is to say, at ordinary temperatures.

Long ago, the opinion began to prevail that the Sun was a molten mass of fire; and a very rational opinion, to most people, this will seem to be, considering the heat and light ever evolved from the great center of our system. Then, afterward came a period when that opinion fell pretty much into the back-ground amongst philosophers. It was argued that both heat and light might be produced by an orb neither inordinately hot nor luminous — an opinion, I beg leave to remark, that could never have gained much acquiescence on the part of the unlearned; for much philosophical refinement of thought is needed to reconcile the mind to the notion of heat and light being produced by a body of itself neither hot nor luminous.

Such continued long to be the sum total of our knowledge in regard to the Sun's composition. Doubting, speculating, we lived, but never hoping. Philosophers little knew what a glorious discovery was in store for them.

Every reader of this comprehends, I presume, what is meant by the term "prismatic spectrum," the wondrous colored image thrown upon a screen when a jet or thread of white light is analyzed or unraveled, so to speak, by means of a transparent triangular prism. Now, whatever the source of light may be, provided it evolve white light, a colored spectrum

may be produced by the agency of a triangular prism. Take heed, then, of the following fact, for upon a full comprehension of it a good deal hinges. A very unimportant fact you may be inclined to regard it, but the philosopher looks upon every fact, every revelation of truth, as having importance. The application of it may not come to-day—to-morrow; not in our time, perhaps, or it may be not for centuries after our time, but come assuredly it will; for facts are laws, and the laws of nature are impressed by God, and he does nothing in vain.

The fact to which I would direct the reader's attention, is the existence of certain black transverse lines across the solar spectrum, and only across the latter. If some sufficiently powerful light be substituted for that of the solar rays, then the particular black bands now under consideration are no longer developed. It is important, moreover, to note that the black solar spectral bands never vary—are never altered as to their relative position. This fact was noted and recorded in the annals of science; for, whenever the philosopher notes a constant occurrence, he treasures it. Not unfrequently such treasured stores of truth are pregnant with marvelous revelations, though at the time their full meaning and bearings may be unknown. So much, then, for the aforesaid black spectral bands. Premising that they were first remarked by Frauenhofer, and from that circumstance they have always been called *Frauenhofer's bands*, we will leave them for a time—their consideration to be resumed hereafter.

I must now record the evidence of certain experiments that will seem to be a long way removed from any thing connected with the solar spectrum. Nevertheless, their evidence, joined by and by to the evidence furnished by Frauenhofer's bands, will hereafter reveal to us the great secret of the Sun's composition, in part at least. Did you ever see a display of artificial fireworks, wondering in what manner the beautiful flame tints were produced? Did you ever see an old woman throw a pinch of salt upon the fire "to clear the fire," as she said, before setting on the gridiron? Did you ever push, by design or inadvertently, a bit of copper amongst burning coals or into a candle-flame? The evidence of the fireworks, the salt, and the copper wire, all goes to prove one and the same thing, namely, that each and every metal, as a rule, burns evolving its own peculiar tint. What metals, or what composition of metals, enter into ornamental fireworks, we will not here stop to investigate, but let it be understood that each metal communicates to flame its special hue.

The second and third illustrations (both very simple) are quite sufficient for my purpose. The old woman's pinch of salt — should you witness that experiment again, if not, I beg you will yourself perform it—will be observed to tinge the fire yellow; and so, if you dip a bit of string into some salt and water, then dry it, and when dry plunge it into the flame of a candle, the flame will acquire the same peculiar tint of yellow. And so, if—cross-questioning nature still — you take some of that beautiful and very curious metal which enters into the composition of sea-salt, and which is called "sodium" — if you take some of that metal sodium, and set fire to it in a small platinum spoon, it also — the metal sodium — will be seen to burn with a flame having the same tint of yellow. Similarly, the experimenter would find — were he to take the trouble of performing the experiment — that copper, and every preparation of copper, burns with a green flame. In order to perceive the distinctive tints evolved by respective metals undergoing combustion, no apparatus is necessary; but it is only by the aid of an electric lamp and a triangular prism that the full beauty of the tint can be made manifest. Then will it be seen that sodium, when burned in a little charcoal crucible, within the electric lamp, develops, on the yellow portion of the spectrum, a still yellower band; that copper, similarly burned, produces on the green part of the spectrum a still greener band, and so on—a particular band or bands for each particular metal.

And this is curious too, namely, that if two or more metals be consumed in mixture, such as brass — a mixture of copper and zinc, for example — the prism picks out (so to speak) the rays peculiar to each metal, depositing them in the spectrum duly arranged — each of its own peculiar tint—each in its own proper locality.

So we now, by a course of experiments, have succeeded in obtaining a banded spectrum. The bands of *our* spectrum, however, are colored, whereas those of the solar spectrum—the bands of Frauen-

hofer— are black. "There can hardly be any connection between the two phenomena," say you; wait awhile.

Turn back now again to our sodium. It is burning in a platinum spoon, we will suppose, evolving a vapor; that vapor is burning with the yellow light peculiar to sodium. We will now hold that sodium flame in the very track of the yellow rays that have been separated by the triangular prism from white light of the electric lamp. Watch now the result from the spectrum; a band of yellow seems to be clean cut out. There is, in place of it, *a black band.* Now, is this an arbitrary black band, or is it one to be found in the solar spectrum? Is it one of the Frauenhofer black bands? Yes, it so happens to be; and now, so far as the presence of sodium in the Sun is concerned, we have our revelation.

Assume the following case. Assume that the Sun *is*, as quite anciently it *was* assumed to be, a glowing ball of fire 1,384,492 times larger than our Earth — a seething mass of burning materials. Assume a blazing flame of vapor to surround him — one constituent being the vapor of sodium. These conditions granted, we at once account for the one particular black sodium line or band of the Frauenhofer scale, corresponding with sodium; and we can account for its presence on no other assumption.

Repeating the experiment with other metals, we produce other black bands on our artificial spectrum, conformable in every respect to other Frauenhofer bands; and thus, by following out this beautiful train of reasoning, philosophers have arrived at two conclusions: first, that the Sun, as was anciently supposed, is a mass of molten fire. Second, that he is surrounded with a blazing atmosphere, in which at least exist the metals iron, magnesium, sodium, chromium, and nickel.

Nor have the experiments of Professors Bunsen and Kirschoft, of Heidelberg, (to whom these discoveries are due,) revealed a new mode of analysis for substances already known, but they have actually succeeded in discovering two new alkaline metals to which the names *cæsium* and *rubidium* have been given. Indications of both these metals having been recognized in the waters of Baden and Durckheim, the Professors, after a tedious course of manipulation, succeeded in obtaining them. It now remains to be seen whether this beautiful spectral analysis may not be hereafter applied to the discovery of mineral poisons. Professors Bunsen and Kirschoft are now understood to be investigating that subject.

From the National Review.

THE COURT OF CHARLES II. OF SPAIN.*

In giving some account of these contributions to the history of the court of the last of the lineal male descendants of the great emperor Charles V., we think that less reserve is necessary on the score of credibility than is often the case with such authorities. The memoirs of M. de Villars, at any rate, are written in a clear and unaffected style, without much cause for offense on the score of forced and unnecessary attempts at generalizations or pointed remarks; and if the lady-writers are less free from this imputation, the letters of Madame de Villars, at any rate, have the recommendation of being evidently written on the spur of the moment, and with

* *Mémoires de la Cour d'Espagne sous le règne de Charles II.*, 1678–1682. Par le Marquis de Villars. Londres: Trübner et Cie. 1861.

Mémoires de la Cour d'Espagne. Paris. 1692.

Rélation du Voyage d'Espagne. Paris. 1691.

Lettres de Madame la Marquise de Villars, ambassadrice en Espagne dans le tèms du mariage de Charles II., roi d'Espagne, avec la Princesse Marie-Louise d'Orléans, fille de Monsieur, frère unique de Louis XIV. et de Henriette-Anne d'Angleterre, sa première femme. Amsterdam. 1762.

that want of knowledge of the future, and that crudeness of opinion which adds to the value of historical authorities, though it may detract a little now and then from our estimate of individual penetration. Madame d'Aulnoy—when we have her independently—is more florid and ambitious in her style, and she labors under the drawback of retailing events and anecdotes some years after the time and away from the place. Still, with the exception of a few melo-dramatic stories, her more enlarged representation of men and things in Spain agrees substantially with the short notes of Madame de Villars, and the general body of historical evidence. Ceremonial and custom are so constant and indefeasible in Spain, that there was a uniformity even to monotony in its very disorganization. Its vices at this time were in themselves irregular enough, but they fall under such systematic rules, that they can not fail of speedily impressing themselves in their leading features on the most casual observer; and the degree to which individual character and peculia ities were subordinated to them is so remarkable, that there is less danger than in other cases of the brilliant memoir-writer being carried away by the momentary impressions of a lively imagination. Individual character was getting lost in a common degradation, just as private vices were becoming public and systematic. Men had lost the energy to be original in their sins, and still more the wish or force of character to be original in a different direction.

Pierre, Marquis de Villars, is a name well known in his own time, but less familiar to modern ears than that of his celebrated son, the Marshal, Duc de Villars. The Marquis—we avail ourselves of Mr. Stirling's brief biography—was born about the year 1618, of a family the antiquity and nobility of which is a controverted question among genealogists. He had certainly neither riches nor powerful relatives to push him forward in the profession he had chosen, that of arms, and he had to rely on a fine figure, a commanding presence, and some considerable skill in the management of the sword. When the Prince de Condé commenced the civil war of 1652, Villars was a follower of the house of Charles Emanuel of Savoy, Duc de Némours, one of the lieutenants of the Prince. In the celebrated duel between the Duke and his brother-in-law, the Duc de Beaufort, Villars acted as one of the seconds of the former, and, more fortunate than his principal, succeeded in killing his adversary, the Comte d'Héricourt, whom he then saw for the first time. He had of course to leave the country, and owed his return to France to the good offices of Armand de Bourbon. The Prince de Conti, who, to rid himself of the raillery of his brother Condé at his weakly constitution and ungraceful figure, had come to the conclusion of provoking the Duke of York, then an exile at Paris, into a duel. This design was discovered and prevented; but Villars, whom the Prince had attached to his person, with a view to its better accomplishment, remained in his household, and negotiated a marriage between his patron and a niece of the Cardinal Mazarin, thus gaining a footing with the powerful minister. He also served in Spain and Italy under Conti. Having thus obtained access to the great people of the French court, he soon became a decided favorite with the ladies; and among these is mentioned Madame Scarron, who afterward, as Madame de Maintenon, is said to have been of essential service to her old acquaintance. He had formed an attachment to a young lady of high birth and considerable beauty, but without fortune, Mademoiselle de Bellefonds, whom he afterward married; and during their courtship he received from a lady, who observed the lovers together, but was unacquainted with his real name, the *sobriquet* of *Orondates*, one of the handsomest of the heroes of the popular romance, the *Grand Cyrus*; and long afterward, when age had deprived him of any title to the epithet, he was still familiarly known by it. He served as aid-de-camp to the Grand Monarque in his court campaign in Flanders; but his prospects in the army came to a premature termination, owing to a quarrel between his brother-in-law, afterward Marshal de Bellefonds, and the war minister, Louvois. After acting for a time as governor of Besançon, and then of Douai, he found himself thrown again on his own private fortune, which being small, he solicited and obtained from his friend M. de Lyonne, minister for foreign affairs, some diplomatic missions to Germany and Italy after the peace of Aix-la-Chapelle in 1668. At length, in 1671, he was appointed ambassador to Spain, and after that to Turin; and in 1679, after the negotiation of the

marriage of Charles II. of Spain with Marie-Louise d'Orléans, he returned to his post at Madrid, where he remained until 1682. This is the embassy of which we have some account in the volumes before us. On his return, Villars was in 1683 created a military counselor of state, and sent as extraordinary ambassador to Denmark. In 1688 he received the decorations of the order of "St. Esprit;" and in 1692, on the marriage of Philippe, Duc de Chartres, afterward the Regent Orléans, with Mademoiselle de Blois, he was appointed a chevalier d'honneur to the Duchess. He died at Paris on the twentieth of March, 1698, after a short illness, and was buried in the church of the Carmelites in Rue St. Jacques. His widow, whose letters we have spoken of, survived him till the year 1706. It should be added, that, according to the preface supplied by the unknown writer of the manuscript copy of the memoirs of the Marquis, they were given to the Marquis de Blecourt, as instructions, on his being sent as ambassador to Spain after the Treaty of Partition.

The epoch at which the Marquis de Villars entered on his second embassy to Spain was an important one for that country. A disastrous war had been just terminated by an ignominious peace, which left the country exhausted in its material means, and bankrupt in military glory and national reputation. In the month of June, 1679, when the French ambassador reached Madrid, the responsible minister of Spain was Don Juan of Austria, whom the late king, Philip IV., had recognized as his natural son, and educated for the highest posts in the State. The earlier exploits of the Prince were creditable to his talents; but a great misadventure in Portugal, which secured the independence of that country, was seized on by his enemies (to whose neglect of supplies to the army the disaster is attributed) as a means for undermining him in the good graces of his father. The head of the party opposed to him was the Queen, Mariana of Austria, Philip's second wife. During the latter part of the reign of that sovereign, therefore, and the regency of the Queen-mother which succeeded, Don Juan was banished from court, and from all public employments. The Queen-mother, with her advisers and favorites, Father Nithard, her German confessor, and an Andalusian adventurer named Valenzuela, monopolized all the powers of the State; and even after these ministers were driven from power, in consequence of the extreme unpopularity of their administration, the Queen continued to maintain herself at the helm of government, and ruled very much as she chose until the commencement of the year 1677, when a strong confederacy of nobles summoned Don Juan from his retirement in Arragon, and compelled the Queen-mother to abandon her authority and retire in her turn to seclusion and a most harassing and humiliating espoinage at Toledo. Don Juan now succeeded to the government in the fullness of a popularity with all classes which had been growing up for many years. Before two years had elapsed, he had effectually dissipated all the hopes that had been entertained respecting him, and had rendered his administration as generally detested as that of his predecessor. Sensible of the precarious character of his position, he had endeavored to secure himself, not by throwing new energy and order into the management of affairs, but by banishing several powerful nobles, under pretense of their leaning to the interests of the Queen-mother. Of these the most important was the Duke de Ossuna. Another young nobleman, of some reputation, the Count de Monterey, who had been the head of the party which brought back Don Juan to power, was banished by the latter on account of his getting too much into the young King's good graces. He entirely neglected the King's education; kept him in a state of complete indolence; would not even suffer him to leave the palace unaccompanied by him; and made not the slightest attempt to initiate him into public affairs. The people, as the Ambassador observes, would have easily consoled themselves for the disgrace of the nobles, and the enslavement of the King, if the minister had found some means of relieving their own misery; but, on the contrary, it increased, and with it the taxes. Scarcity became greater; justice was as much wanting as ever, and the finances in as great disorder. No one found himself better off; many found themselves worse. The ill-feeling became general, and people began to regret the regency. But, our Ambassador continues, in Spain more than in any other place in the world, the anger of the people is impotent. This nation, so filled apparently with pride, seems to lack the heart to do

more than murmur at its calamities and those of the State. The exiled nobles were likely to be more dangerous enemies to the minister, through their numerous relations and connections, and in fact these secretly entered into correspondence with the Queen-mother, and began to plot her return to power. Libels of every sort, and a general ferment in the public mind, seemed to augur a coming storm, and the minister, filled with anxiety, but naturally irresolute, remained inactive, perceiving the machinations of his enemies in every direction, but not considering himself strong enough to assume the offensive, and feeling the ground shaking under him even in his last stronghold—the King's palace.

Charles II. of Spain—of whose declining years Lord Macaulay has drawn such a vivid and painful picture—had now attained the age of eighteen. For some years after his birth it had seemed probable that the feeble and sickly child would, by a premature death, bring the question of the succession to the throne to an immediate crisis. But he struggled on through childhood into youth, and in his sixteenth year appeared to shake off, in some measure, the symptoms of disease which had seemed to foreshadow his death. He is described, at the period of which we are now speaking, as being of a fair and delicate complexion; his forehead rather broad, his eyes fine and with much sweetness in their expression; his face very long and narrow, very thick Austrian lips, and wide mouth; his nose very aquiline, his chin sharp and turned up. He had a profusion of fair lank hair put behind his ears. He was of middle hight; his body straight and slender; with small legs "almost all of a thickness." If from this description by an eye-witness, we turn to the portrait which illustrates Mr. Stirling's volume, we shall be able to identify the lineaments, though it represents him at a more advanced age. There is the breadth of forehead, strangely contrasting with its lowness and flatness. With the exception of its great length, and the protuberance of the lips, the face is a handsome one. The artist has not given us the complete impression of the aquiline nose, but he has done justice to the eyes, and probably more than justice to the hair. But, what the eye-witness has failed to point to, the artist has unintentionally conveyed—the vacuity of the mind which should have animated these not unprepossessing outlines. The forehead, if free from decided marks of want of intelligence, is at least neutral on the question. The nose, whose contour might have imparted some impression of strength to the face, is far from being able, with the regularity of its curve, to overpower the testimony of the eyes and mouth—the former mild, somewhat sleepy, and wholly without expression; the latter roughly cut, purposeless, and devoid alike of refinement and sagacity. It is altogether a countenance a first glance at which might give an impression of physical good looks, but a second could hardly fail to leave the conviction of intellectual, if not moral deficiency. The mold of something greater and nobler was still partially preserved, though here and there defaced and broken; but the energy which should impart nervousness and character to the outlines was wholly wanting. The last of a line of princes, whose blood, originally tainted with the imbecility of Juana of Castile, and the strange and morbid fancies of her great son, had gone on degenerating, and giving more and more evident symptoms of disease, through the three successive Philips, Charles II. seemed born for the purpose of exhibiting the decay of his race in its most pitiable form, as he also inherited an empire reduced to the lowest state of prostration and misery, through the long-continued exercise of their selfish and ignorant despotism. He was the offspring of one of those marriages which for so long a time disgraced the reigning families of the Peninsula, his father and mother standing in the mutual relation of uncle and niece. The intermarriages with the kindred branch of Hapsburg, so often repeated during the century which followed the establishment of the family of Charles V. on the throne of Spain, could hardly be bettered in their results by this outrage on the laws of consanguinity. It is very possible, indeed, that a different training in childhood and youth might have checked in the heir of Charles V. the immediate growth of this mental incapacity. But neither the Queen-mother nor Don Juan seems to have attempted to rouse or enlarge the mind of their royal ward; and the latter, at any rate, seems to have been bent on narrowing it and deadening its energies still more, for the purpose of maintaining his own ascendency, if not with the ultimate idea of himself superseding his half-brother on the throne. The unfortunate

youth can hardly have been naturally of a bad disposition, or else such a course of studied neglect and demoralization could not have failed to develop itself in some flagrant acts of wickedness. But perhaps the unquestionable mental disease which lay in his veins partook so much of the character of inaction and want of sustained interest in most objects, that many of the evils of such an ill-regulated education were guarded against by nature herself. His youthful freaks, if not particularly amiable, do not imply much more than thoughtless selfishness. Thus Madame d'Aulnoy tells the following story, which, if not true in itself, probably represents pretty well a class of incidents which were understood by courtiers and their friends to reflect the character of the young sovereign: "Some days ago," she says, "when it rained and thundered most terribly, the King commanded the Marquis deAstorga to wait for him upon the terrace-walk of the palace. The good old man said to him, smiling: 'Sire, will it be long before you come?' 'Why do you ask?' said the King. 'That your Majesty,' replied he, 'may send a coffin to put me in; for there's no likelihood that I should be able to contend with such weather as this.' 'Go! go! Marquis,' says the the King; 'I'll come to you.' The Marquis went out, and without any scruple stepped into his coach, and went directly home. Two hours afterward the King said: 'I'm certain the good man is wet to the skin; let him be called in. I've a mind to see him in such a condition.' But they told the King that he had not exposed himself at all; upon which Charles observed that 'he was not only old, but very wise!'"

He seems indeed to have been, like our own Charles II., generally good-natured, so far as ingrained selfishness would permit, and unless there were some immediate disturbing cause, but with the entire thoughtlessness of a selfish man as to the feelings of others, and with a complete disregard of them when they crossed his immediate whim—happily generally of a transient character. His daily life was dreary and monotonous enough. At home he was either entirely idle, among dwarfs and strange animals, or playing at games of hazard for the very smallest stakes, and in the dreariest way. He was minute and sedulous in the ceremonials of religion, and expecting all about him to go through the same forms. At the proper seasons he was diligent in going from church to church, and liked particularly to make ceremonial visits to the convents, and hear the services performed there, and sit through the most formal and uninteresting interviews with the superiors. Now and then he listened patiently to the performance of long Spanish comedies. Twice a year he made the appointed state journeys to the palaces of the Escurial and Aranjuez; at the former gloomy mansion of the dead he visited the tombs of his royal ancestors, at the latter he rode out to battues of inclosed game. Sometimes he indulged in boar or wolf hunts, and probably his greatest personal achievement on record is that narrated by himself in the following brief epistle, dispatched by special courier to his young Queen, during a short absence from Madrid: "Madame, the wind is very high. I have killed six wolves!" He had, however, displayed two decided aversions—one to women in general, the other to every thing and every body French. The reason of the former is said to have been the extremely unpleasing impression which he had derived from his treatment by the *gouvernante* and ladies in waiting, to the mercy of whose ceremonial tyranny he had been handed over from his birth down to an absurdly late period of his boyhood. The story is, that as a youth he would fly from the face of a woman as from the pestilence. Perhaps Don Juan built on this rooted aversion when he was compelled to entertain the idea of the marriage of the young King, and hoped that the delays thus interposed to every proposed match would end in the King remaining unmarried. The Queen-mother had entered into a marriage contract for her son with her niece, the daughter of the Emperor Leopold; but Don Juan had broken off the match, and the young princess married the Elector of Bavaria. An alliance with the royal family of France was now proposed, though by whom first it is not easy to say; and Don Juan was obliged to pretend to promote this match, while secretly raising obstacles to its realization. But if he counted on the King's repugnance to any woman, and much more to a French woman, he was grievously disappointed. No sooner had the young Prince seen the portrait of the Princess Marie-Louise of Orléans, the daughter of the King of France's brother, and granddaughter of our Charles I., than he fell

violently in love with it; and the courtiers around him, who were opposed to Don Juan, and some of whom had seen the Princess, inflamed still further his new-born passion by dilating on her beauty and accomplishments. Before this newly-awakened torrent of love every thing gave way. In vain did Don Juan suggest impossible conditions as preliminaries to the marriage treaty; in vain did he try the counter-charm of a portrait of the Infanta of Portugal, and even dispatch an envoy to open negotiations in that quarter. The King had for once made up his mind; the nobles opposed to Don Juan saw in the match a means of undermining his power; the Spanish nation, eager to secure a successor to the throne, and mindful of the virtues of the young French wife of Philip II., entered warmly into their youthful monarch's enthusiasm; the Queen-mother applauded the match, seeming to have forgotten her own defeated project; and the Grand Monarque, Louis XIV., expressed his ready consent. The Spanish minister therefore found it best to carry out with a good grace what he could not prevent, and the marriage took place by proxy at Fontainebleau. Eight days after the arrival of the news of this event at Madrid, Don Juan of Austria expired of a fever, brought on by the ruin to himself which he saw impending. The King visited him in his last illness, and exhibited signs of great emotion, tenderly reproaching him with leaving him unsupported by his advice at such a crisis of public affairs. It is certain, at the same time, that the King had been holding secret consultations with the disaffected courtiers, whom he had compelled Don Juan to recall from exile a short time before. Probably both actions were genuine in their turn; the King longed to get rid of his arbitrary master, but when the time of release approached, became alarmed at the idea of the loss of his counsels, and remembered only how well he had saved him from the trouble of thinking! The public rejoicings for the marriage of the King were going on while the minister lay dying; and even under his windows the noise of fireworks increased the intensity of the headache with which he was oppressed.

Two days after the death of his minister, the King hastened to Toledo to see his mother, that minister's greatest enemy. They both displayed signs of the warmest mutual affection, and returned together to the palace of the Buen-Retiro, near Madrid, where the King visited her every day, till he set off to Burgos to meet his bride. With her expected arrival every body was now occupied, and state affairs and the organization of a new cabinet were alike postponed till this event had taken place. The King's ardor rather increased than abated. If she were not arrived at Burgos when he reached that city, he declared, according to Madame de Villars, that he would carry off the archbishop of that city with him to Vittoria, or even the frontier of France, if she had advanced no farther. The young Queen traveled, according to state usage, attended by a brilliant escort of French cavaliers and dames d'honneur. Every stage of her progress was notified by dispatch to the court of Spain; and the grand major-domo of the palace, our friend the Marquis de Astorga, and the Camerera-Mayor, regulated their progress to meet her in accordance with this programme. The young Queen had exhibited no such eagerness for the match as her future husband had done. She is said to have been desirous of marrying her cousin the Dauphin, and to have replied to Louis XIV. when he told her he could have found no grander match than that with Spain for his own daughter, "Ah! sire, but you might have done better for your niece!" She was about a year younger than her husband, and seems to have possessed much of the personal attractions and the gay *insouciant* tone of character which had rendered her unfortunate mother, Henrietta of England,* the darling of the brilliant court of France. She was now to quit this joyous and congenial scene, in the midst of which she had moved the whole of her life, and to be consigned, in the very prime of youth and beauty, to the dull ceremonialism and punctilious gravity of the Spanish court. "Que c'est une belle chose de rire en Espagne!" exclaims Madame de Villars, in the exasperation of her Parisian feelings at the solemn outward demeanor which every true Spaniard thought it his or her duty to assume in the intercourse of daily life. No two nations, she tells us, could possibly more entirely differ in every thing, especially their social habits, than the French

* It is curious that Mariana, the mother of Charles II. of Spain, was the daughter of that Infanta for whose sake Charles I. of England—the grandfather of the Princess Marie-Louise of Orleans—made his adventurous journey to Spain.

and Spaniards. It was to such a sphere of life that the bright young French princess was to be transferred, with seemingly little, if any, previous tuition as to her necessary change of habits. Madame de Villars complains, more than once, in her letters, that no experienced person had been sent with the princess to her new home, who might have advised her on such points and on her conduct generally, and on whose advice she might have safely relied. Perhaps they feared to tell her too much of what was impending over her, and the less they said on the subject of her future husband, probably the better for her present passive acquiescence in the match. As long as her journey continued to lie through France, all went on much in accordance with the routine of her former life. She eat in public, she danced, she rode on horseback at her pleasure, she enjoyed the *chasse*, and she gambled with her attendants. Madame de Villars tells us that she lost, during her journey, in the last-mentioned amusement, no less than a thousand pistoles to the Prince and Princess d'Harcourt. When they had to quit the young Queen on their return to France, they had considerable doubts as to the fate of this debt of honor; but their young companion faithfully remitted the sum to them from Madrid. Shortly before the cavalcade met that of the King of Spain, one of the old *sous-gouvernantes*, who had insisted, notwithstanding her infirmities, on pursuing her appointed destination, actually expired in her litter; and so the Queen met her husband attended by a corpse! This might seem no unfit prelude to the unpleasant change in her life which occurred on her entering the territory of Spain. In a moment she found herself surrounded by persons wholly unknown to her, and to whose language she was equally a stranger, whose ceremonial attentions embarrassed her, and whose constrained and stiff manners, to use M. de Villars's expression, took away from her all that had constituted "*la douceur de sa vie*." The camerera-mayor, the Duchess de Terra-Nova, is painted in very unpleasing colors by both M. de Villars and Madame d'Aulnoy. Madame de Villars is more lenient or more cautious; she speaks of her as "*spirituelle et très-honnête*;" but in her letters, it must be remembered, (which were evidently handed about the court of France,) she endeavors to make the best of every thing; and the special traits which she records of the Camerera-mayor's actual conduct fully support the less favorable estimate. The antecedents of the Duchess do not prepossess us in her favor. She had formerly been obliged to leave Madrid, on suspicion of having caused the death of her cousin-german, Don Carlos of Arragon, to whom belonged the duchy of Terra-Nova, and other property, which she kept him out of possession of. In Arragon, whither she retired, she formed the friendship of Don Juan, who detected her great ambition and boldness, disguised under formal and *dévote* manners. She was supported by his influence till his death, when every one supposed that she would be ruined. But she proved herself able to hold her own. Having received from him the appointment of Camerera-mayor to the new Queen, she set out with the Marquis de Astorga, and others who had been named to their posts under the same influence, and determined, in conjunction with them, to take up such a position with her royal mistress as should safely entrench her against all her enemies. Her plan was to gain, by fair or other means, a complete ascendency over the mind of the inexperienced girl; and with this view she exaggerated all the rigid rules of Spanish punctilio, and at once endeavored to banish from the Queen's life every thing that she had been accustomed to in France, making her thus dependent on her for the regulation of every action, and isolating her effectually from every other influence except that of the Marquis de Astorga, and her other confidants. To support this assumption of authority with the Queen, the Duchess first made herself acquainted, from the French attendants and others, with every thing which would throw light on the Queen's early life and disposition. When she had fathomed what we shall soon see was not a difficult or deep character, she insinuated to the King, to whom she paid assiduous court, that it was necessary to guard against his wife's natural French volatility and thoughtlessness, and that, to prevent evil counsels and habits from forming themselves, she could not be too closely restricted to the customary rules by which the conduct and habits of Spanish queens were regulated. She gave the King the idea that she alone, by her appreciation of the Queen's disposition and foibles, was competent to perform the necessary office of surveillance; and thus, through the in-

experience and timidity of the one, and the weakness and prejudices of the other, the Duchess found herself mistress of the situation, and able to bid defiance to any change of state ministers. Into the unsuspecting ear of the young Queen she poured—if our French authorities are to be believed—every kind of warning and insinuation against the Queen-mother and the French Ambassador, whom she represented, seemingly with justice, as entirely in the Queen-mother's interests. There had been some disagreements between Don Juan and the Marquis de Villars as to the ceremonial to be observed in their interviews; the former claiming and having exacted from some of the other ambassadors, the honors due to an Infante of Spain. Villars had also paid a visit, on his arrival, to the Queen-mother at Toledo, and had been welcomed by her partisans as a valuable ally, though he was too cautious to commit himself to their counsels. As respects the Queen-mother, however, the reports of the Camerera-mayor were calumnious and indefensible in the highest degree. So far from being hostile to her son's wife, as the Duchess pretended, on account of the abortive Austrian match, the Queen-mother, from beginning to end, displayed the warmest and most affectionate feelings toward her young daughter-in-law, and endeavored, by every means in her power, to promote her comfort and happiness in her trying position, and to gain her confidence. In this last attempt she was long unsuccessful, owing to the prejudices impressed on the young Queen's mind by the Camerera-mayor and her confederates.

From the moment of her setting foot in Spain, intriguers of all descriptions flocked around the Queen. Two of these especially deserve notice. A Theatin of Sicily, of the name of Ventimiglia, formerly a creature of Don Juan's, who had distinguished himself by his abusive sermons against the Queen-mother, now, upon the termination of his patron's career, determined, if possible, by a bold stroke, such as that of the Duchess de Terra-Nova, to secure a place for himself in the future disposition of affairs. He, like others, hoped, through the instrumentality of the young Queen, to place in power a cabinet of their own selection. Setting out, accordingly, in company with the Duke de Ossuna, Master of the Horse to the Queen, who was animated by similar motives, the Theatin made his way to the presence of the Queen, and by his adroit and pleasing manners gained credit with her and her French attendants as a useful counselor. He also confirmed the calumnies against the Queen-mother and the French Ambassador; but he went too far in his ambitious efforts. Not content with advising who ought and who ought not to be admitted to her Majesty's confidence, he went so far as to draw up a scheme of government, which he submitted to the Prince d'Harcourt, and a new cabinet, at the head of which figured the Duke de Ossuna. He even had the audacity to draw up two more similar memoranda and submit them to the Queen, through a French gentleman in his interests. The papers were almost immediately returned to him, and he received forthwith an order from the King to quit his dominions. He obeyed, complaining bitterly of the French Ambassador, to whose influence he attributed his disgrace. The Duke de Ossuna failed in a somewhat similar manner, arrogating to himself, as Master of the Horse, functions which properly belonged to the Marquis de Astorga, as Major-domo. The latter, who, we have seen, was not deficient in spirit, complained by letter to the King; and, on the injunctions of the monarch to the Duke de Ossuna being disregarded by that nobleman, he was at length ordered to return forthwith to Madrid, and not to approach Burgos, in the neighborhood of which the marriage-ceremony was to take place.

The French Ambassador had hastened with the rest to meet the young Queen. He obtained an interview with her, and found her much out of spirits, and very uneasy at the reports poured into her ears, and at the strange and ungenial habits of life to which she had been introduced. He endeavored to suggest to her the best means of accommodating herself to her new position, and recommended her especially to cultivate the friendship and seek the advice of the Queen-mother, of whose good-will and affection for her he gave the strongest assurances. But he found that his counsels met cold acceptance, owing to the prejudices which the Duchess and her allies had already instilled into the Queen's mind. An attempt was even made by this clique to prevent him from being present at the ceremony, which took place, not at Burgos, but at Quintanapalla, a place which the Ambassador de-

scribes as the most miserable village in Castile, consisting of only nine or ten houses. Here, however, it was performed in the most paltry and mean manner. The meeting of the King and Queen had been an embarrassing one on both sides. Neither could speak a word of the other's language; and the Ambassador found his services as interpeter between them of great use. With Parisian dexterity, he improvised or invented some pretty compliments on both sides, and no doubt contributed in this manner to make the first impressions more pleasing than they otherwise would have been. The Queen, we are told, was fairly astonished at the King's dress and appearance; and the King scarcely realized his preconceptions of the beauty of his wife till she exchanged her French dress for one made in the Spanish fashion. They made a solemn entry together into Burgos; and the young Queen charmed even the grave Spaniards by her gentle and graceful manners. As our readers may be curious to know what were the relations into which the newly-married pair settled down with respect to one another, we will anticipate dates a little and follow them into their daily life at the Buen-Retiro, and afterward at Madrid. Madame de Villars must be our chief informant; for although the Camerera-mayor made an attempt to shut her out as well as her husband from all early intercourse with the Queen, on grounds of state ceremony, they both carried their point, owing to the interference of the Queen-mother and the strong wishes of the Queen herself, who longed more and more for some one French to talk over old times and old friends with, and to pour out her grievances to. This intercourse became more and more unrestrained, cordial, and frequent. The Ambassadress endeavored to draw back and limit it a little in point of frequency, but the Queen's importunity prevailed; and we thus gain a curious portrait of the young mistress of the royal palaces of Spain. The picture is of a mixed character. Nothing in itself could be less inviting than the life which she was doomed to lead. Madame de Villars, disposed as she was to see every thing which *must* be in the best possible light, repeatedly expresses her astonishment that any one could preserve either health or spirits under such a monotonous and wearing trial. As to the actual affection of the royal pair, the Ambassadress contents herself with saying, that the King loved her after his fashion, and she him after hers. The former consisted in a desire to lose sight of her as little as possible; to make her play at a wearisome game of hazard, at which he could not lose by any possibility more than one pistole; and to drag her forth to his dreary visits to the convents. A pleasanter mode of showing his affection—which seems to have been real, though otherwise of a strange, tiresome, uninteresting character—was to make her presents, which the Queen, Madame de Villars says, was well pleased to receive. And these, she adds, were her only consolation. Some relaxations had been introduced into the severe discipline of the Camerera-mayor, owing to the interference of the Queen-mother, who saw the unhappiness of her daughter-in-law, and told the King her health would otherwise become affected. But the King continued to display his aversion to every thing French. Madame de Villars tells us that he disliked herself less than any of the other French women about the Queen; but this, she candidly adds, was because he saw less of her. The Queen's French pets fared still worse. Madame d'Aulnoy tells us some amusing stories in illustration of this. The Queen had brought with her from France several French dogs and some parrots. The King hated both; and when he saw the former he would cry, "Off with you! off with you! French dogs!" One night a favorite spaniel of the Queen's, who slept in her bed-chamber, was missed by her. She rose and proceeded to hunt for the animal. The King, finding *her* missing, rose, in his turn, to seek her. They were both groping in the dark, and stumbling against every thing for some little time, till the King, losing all patience, called out to the Queen to know why she had got up. On learning the cause, "What!" he exclaimed, "are the King and Queen of Spain to get up for a wretched little dog?" and in his vexation he gave a kick with his foot to the little animal, which unluckily had just run against his legs, and thought of killing it. The Queen, at the cries of the animal, could not refrain from complaining gently, and returned to her bed very sad. Neither King nor Queen, however, could find the dog again, and they had to summon the *femmes de chamber* for a light. The next morning the King left the Queen early for the hunt, without a word to her. Much troubled at this, she watched at the win-

dow for his return, notwithstanding the remonstrances of the Duchess de Terra-Nova, who said it did not become a Queen of Spain to look out of the windows. When she saw the King coming, the Queen hastened to meet him, and reassuming for the moment her old pleasant *liberté française*, threw her arms around his neck. The King, in his turn, charmed for a time both out of his ill-humor and his Spanish etiquette, embraced her several times, instead of merely pressing both her arms with his hands, as was the custom in Spain. Finding him thus softened, the Queen seized the opportunity to procure from him the recall of the Duke de Ossuna to his office of Master of the Horse at the palace.

The fate of the parrots was still more tragic. They had rendered themselves peculiarly obnoxious to King and Spaniards by only speaking French: the Queen had by this time made herself mistress of some Spanish. The Camerera-mayor took matters into her own hands, and during the absence of the Queen wrung the birds' necks. The Queen, on learning what had occurred, when the Camerera-mayor came to kiss her hand, boxed her ears twice. The Camerera-mayor assembled all her kindred and friends at the palace, and demanded redress from the King for the insult offered to her. The King, unwitting of the original cause, which both parties concealed from him, exhorted the Queen to make amends to the Camerera-mayor. The Queen, like a true Frenchwoman, devised an ingenious excuse for her conduct, which implied that it was a whim occasioned by a state of things which promised an heir to the Spanish throne. The King, deluded and delighted, expressed his willingness in that case that she should cuff the Camerera-mayor as much as she liked! But Madame de Villars soon guessed, and eventually all Spain and Europe learnt, that an event so fondly desired by all Spaniards was out of the question. The King's affection, such as it was, assumed at times a troublesome form. His dislike to any French person, fostered by the Duchess de Terra-Nova, was carried to the most absurd lengths. Not content with getting rid—by rendering their life insupportable—of all the French attendants of the Queen, he was jealous of the most insignificant Frenchman who passed under her windows, and even put himself into the most violent state of excitement at a wretched fool who begged alms of the Queen as she entered her carriage. A still greater commotion was occasioned by two gentlemen in the train of the ambassador of Holland, who chanced to make a profound reverence to the Queen as they met her and the King in the royal carriage. As they were dressed in the French fashion, and stopped on the Queen's side of the carriage, the Camerera-mayor took such umbrage at it, on the King's part, that a message was actually sent to the Ambassador that no one should place himself on the Queen's side of the carriage, or bow to her. It is amusing to find, from a story told by Madame d'Aulnoy, that the King remained altogether ignorant of what might have been a legitimate cause of jealousy: twice the Queen found in her pocket, on retiring to rest, a letter addressed: "For the Queen alone." The first time she opened it, and found it full of expressions of passionate love, and apparently from some one high at court. Puzzled how to act, afraid of a violent scene if she showed it to the King, and yet fearing it might be a snare of the Camerera-mayor, the young Queen very wisely took an opportunity of giving it to the Queen-mother, asking her advice, and begging her to keep it. The Queen-mother comforted and reassured her, promising she would take care no mischief came of the matter. On receiving, after an interval of time, a second letter, the Queen, without opening it, carried it also to the Queen-mother, who repeated her reassuring words, and afterward told the story to a Spanish lady of high rank, from whom Madame d'Aulnoy derived it, as an instance of the Queen's innocence and frank disposition. Madame de Villars, admitted to greater intimacy, gives us much the same impression of the young Queen's character. Notwithstanding her sad and monotonous life, the buoyant spirits of the French Princess rose again on the most trifling opportunity. She not only preserved her health, but grew more robust, her throat becoming rather too full for severe beauty. "It is a fine thing," exclaims Madame de Villars, "for preserving health and beauty, to be eighteen, and with a disposition that believes in the possibility of every thing which it wishes!" When alone with the Ambassadress, her girlish spirits rose to the highest, and she must have presented a charming picture as she walked up and down the stately

gallery—her light graceful figure, decked with a profusion of jewels, reflected in the mirrors as she passed, and glancing in the light cast by the ranges of silver candlesticks, which were replenished at intervals with low obeisances by the little maids of honor, none of them above ten years of age—her complexion transparently fair and clear—her beautiful brown hair parted across her forehead, and falling over her shoulders behind, clasped in a heavy circlet of gems—her eyes brilliant and expressive—her mouth full of sweetness, and particularly charming when she smiled—in all the bloom of youth and beauty. Now she would play on some musical instrument, of several of which she was mistress; now she would dance to the playing of the Ambassadress. Her dancing was one of her great accomplishments. Madame de Villars once read her a passage in a letter from Madame de Sévigné, in which that lady spoke of the young Queen's pretty little feet, that made her dance so nicely and walk so gracefully. The Queen was pleased at this, but soon bethought her that there was nothing now for her poor little feet to do but to pace up and down the saloon, and carry her to bed at half-past eight in the evening. This was one of her smaller grievances, and it was a great triumph on her part when she persuaded the King to sit up till ten o'clock at night, and even to drive out at that hour in the hot summer evenings. Now, for a change, she would call upon Madame de Villars or her daughter, who sometimes accompanied her, or took her place—to join her in singing an air from the last French opera, or one of M. de Calanges' songs, duly forwarded from Paris for her recreation. Then she loved, if she could, to entice the cautious Ambassadress into stories of the gayeties and doings, past and present, of the court of France; but Madame de Villars generally changed the subject, finding it was a dangerous thing to dwell on the pleasant memories of Fontainebleau and St. Cloud. These unreserves were of course when they were alone, or could converse without being understood. The King only too frequently entered the room, when every one, according to etiquette, at once quitted it. He would then carry off the reluctant Queen to his dull game for a pistole; but she behaved admirably on all such occasions, and during all this tedium never failed in her assiduous and affectionate attentions to the King, and in her unbroken cheerfulness. The Ambassadress can not too much praise her discretion in these respects. Now and then only she forgot herself for a moment, sometimes harmlessly enough. Once, at the representation of a dull Spanish comedy at the palace, sitting with the King and Queen-mother behind a screen, she suddenly called out Madame de Villars' name. That lady happened to be close at hand, and thinking herself summoned, made her appearance. The young Queen, on seeing her, burst out laughing; and the Queen-mother, as the Ambassadress says, always glad to see her daughter-in-law amused, lent her countenance to the frolic. Such a bright, happy, amiable character is an agreeable interlude in the dull and miserable records of this reign. Fortunate, indeed, was it for the young Princess that she possessed this gayety and buoyancy of spirit, without those deeper feelings and aspirations which would have rendered her life insupportable, and embittered every trifling pleasure. The Ambassadress, more than once, after dwelling on her charming sweetness and gentleness, ends with the words, *Et violà tout!* But we must hurry from this "interior" of the palace, which the skillful hand of the Frenchwoman has drawn for us, to the less pleasing events of public life.

[TO BE CONCLUDED.]

KINGSLEY PERPLEXED.—A correspondent of the *Manchester Guardian* writes: "Let your readers conceive the perplexity of Professor Kingsley, at Cambridge, who has lately been informed that, by virtue of his professorship of history, he is *ex officio* ceremonial poet for the University, and must write an installation ode on the Duke of Devonshire! Now, the Duke is a very sensible and worthy nobleman; he is, besides, a lover and follower of science, was senior (or second) wrangler, and has reflected fresh luster on the distinguished name of Cavendish by his early scientific triumphs and his continued scientific tastes and pursuits. But still, one would rather not have to write a poem upon him, and one may fairly be curious to see how Professor Kingsley will discharge the official task."

From the British Quarterly.

LIVES OF THE ENGINEERS.*

In 1759 the Duke of Bridgewater obtained an act authorizing the formation of his projected coal-canal from Worsley to Salford, and thence to the Mersey. He at first intended to carry it down to the level of the Irwell, by a flight of locks, and up again on the other side. Subsequently the Duke obtained the advice of Brindley, who urged that the canal should be constructed on one level, and carried *over* the Irwell by a series of arches. By these means incomparably greater facilities in the management of the traffic would be secured, while the cost of making and working the locks might be set off against that of the embankment and aqueduct that would be required. Fresh powers were obtained, a detailed survey of the new line was made, various preliminary works at Worsley, sanctioned by the previous act, were actively pushed on, and at length Brindley, as his pocket-book records, "Sot out for London," on horseback.

Many difficulties had to be overcome in the accomplishment of so novel and serious an enterprise. To confine a large body of water in which ships could float within a water-tight channel along the top of an embankment and over a lofty bridge —to carry a river over a river—was a project altogether unprecedented in this country, and not likely to escape derision. The Duke was urged by his friends not to risk his money in so hazardous a speculation, and when, by Brindley's desire, another engineer was consulted as to the practicability of the enterprise, that gentleman deprecated the formation of the Barton aqueduct and embankment as reckless and vain, and concluded his report by saying: "I have often heard of castles in the air, but never before saw where any of them were to be erected." But the confidence of the Duke in his engineer was not shaken, and the work proceeded.

The Barton aqueduct is about two hundred yards long and twelve wide, the center being a bridge of three semicircular arches, the middle one of sixty-three feet span, and high enough to allow the passage of the largest barges without lowering their masts. But a chief difficulty was how to confine the water of the canal to its channel. It was supposed that it would soak through the embankment and wash it away; and the anxiety was not a little increased when it was found that the weight of the embankment pressed down and "blew up" the soft oozy stuff of Trafford Moss, on which it rested. But this was effectually overcome by "puddling," a process which Brindley on one occasion explained to a Parliamentary Committee. On being asked what was meant by the term, he directed a mass of clay to be brought into the room, and he molded it in its raw untempered state into the form of a trough, and then poured water into it, which soon ran through the bottom. He next worked up the clay with water, into a nearly semi-fluid state, made it again into a trough, and filled it with water, which it now held without a drop of leakage. "Thus it is," said Brindley, "that I form a water-tight trunk to carry water over rivers and valleys, wherever they cross the path of the canal." Puddling is usually applied in three or more strata, to a thickness of about three feet, care being taken to unite it into one mass. Over the top course a layer of common soil is usually laid. By these means the filtration of water is prevented, and the Barton canal is in this respect in as sound a state as on the day it was completed. The aqueduct has since been surpassed by vastly greater works, but it is the parent of them all.

Besides the general construction of the canal, the engineer had a multitude of other arrangements to complete for its successful working. Brindley never permitted the waters of a brook to intermix with those of the canal, except for the

* Concluded from page 331.

purpose of supply, lest floods should arise; and, accordingly, intercepting streams had to be diverted, sometimes by very ingenious arrangements. Contrivances were also made for loading and unloading; a steam-engine for draining the mine, and water-bellows for ventilating the works, were erected; and at Worsley a large basin was excavated to receive the barges and to serve as a head for the navigation. The engineer also made a subterranean canal into the workings of the mine for the distance of a mile, and this has since been extended for nearly forty miles. On the letting of the water into the canal, the nervous excitement of the hardy engineer is said to have been so great that he took to his bed, and remained there till all room for anxiety was over. The canal was long the wonder of the district, and strangers came from a distance to see "a river hung in the air," on which a horse was drawing several barges, crossing another river where ten or a dozen men were slowly dragging a single barge against the stream.

The complete success of the Worsley and Manchester Canal at once suggested its extension to the Mersey, so as to open direct communication between Manchester and its natural port of Liverpool. Between those towns there then existed only the roads and the river navigation of the Mersey and Irwell; and so bad were the roads, that even pack-horses had great difficulty in getting along, while on some parts of the river boats could proceed only at spring-tides, in great freshes, or by drawing extraordinary quantities of water from the locks above. Occasionally they were entirely stopped. A readier communication was matter of urgent importance. "Her Majesty's poor decayed town of Liverpool," as the burgesses called themselves when addressing Queen Elizabeth, and the chapman of Manchester, had risen in the world; and the situation of the one town at the mouth of a deep navigable river, and of the other amid coal and iron districts, made them mutually dependent, and had elevated them to commercial and manufacturing importance. Still, we are informed, that so late as 1750, "there was but one *gentleman's* carriage in the town of Liverpool, and that carriage was kept by a *lady*;" and it was not till 1767 that a stage-coach began to run three times a week; and, by starting early in the day, accomplished the thirty miles generally in time for supper. On one occasion, when "the coach was dining" as usual at Warrington, some of the passengers intimated to the coachmen that they had not finished their wine, and added, that they supposed he was not in a hurry. "Oh!" he replied, "I'm not partic'lar for an hour or so!"

In 1761, Brindley visited Liverpool, to make, what he would call, "an ochilor survey" for the new canal. The proprietors of the Mersey and Irwell Navigation had learned the superiority of canals, but though themselves unable to conduct the traffic, they opposed the projected extension. They began, however, by offering to reduce their rates; then proposed to confer exclusive advantages on the Duke; and these efforts failing, they employed every means to save their monopoly by preventing the passing of the bill, and were supported by the then Lord Derby. Brindley appeared in its support. It is to be regretted that no copy of his evidence has been preserved, since it was probably as interesting and characteristic as that of George Stephenson under similar circumstances. When Brindley was asked to produce a copy of a proposed bridge, he replied that he had none, but that he would illustrate by a model. He obtained a large cheese, and cutting it in two equal parts, said: "Here is my model." The two halves represented the semicircular arches, and by laying upon them a long rectangular object, the committee saw the position of the river and of the canal flowing over it. This canal was twenty-four miles in length, and crossed a heavy bog at Sale Moor, that rested on a bottom of quicksand. Brindley resolved that the canal should consist of one dead level of water nearly all the way from Manchester to the Mersey, and that it should then descend by a flight of locks. This was in strict accordance with his principles. He was accustomed to compare water in a river flowing down a declivity, to a furious giant running along and overturning every thing; "whereas," he said, "if you lay the giant flat upon his back, he loses all his force, and becomes completely passive, whatever his size may be." It is also related, that on one occasion, when urging before a committee of the House of Commons the superiority of canals to rivers, the question was put: "Pray, Mr. Brindley, what then do you

think is the use of navigable rivers?" "To make canal-navigations, to be sure," was the instant reply.

The total outlay on the canal from Worsley to Manchester and the Mersey was two hundred and twenty thousand pounds. The unexpected difficulties and cost often exhausted the purse of the young nobleman, and it was only with the strictest economy that the work was completed. Though the Duke reduced his private expenses to four hundred pounds a year, and had but two horses for himself and groom, he was sometimes in the greatest strait to pay the wages of his men; he had to borrow money from his tenantry; and at one time could not get a bill for five hundred pounds cashed either in Manchester or Liverpool. In a small whitewashed public-house upon the Moss, many an evening was spent by the Duke, Mr. Gilbert, and Mr. Brindley, in contriving how the work should be carried on. One evening in particular the party was unusually dull and silent. The Duke's funds were exhausted; the canal was by no means nearly finished; his Grace's credit was at the lowest ebb, and he was at a loss what step to take next. There they sat, in the small parlor of the little public-house, smoking their pipes, with a pitcher of ale before them, melancholy and silent. At last the Duke broke the silence by asking in a querulous tone: "Well, Brindley, what's to be done now? How are we to get at the money for finishing this canal?" Brindley, after a few long puffs, answered through the smoke: "Well, Duke, I can't tell; I only know that if the money can be got, I can finish the canal, and that it will pay well." "Ay!" rejoined the Duke, "but *where* are we to get the money?" Brindley could only repeat what he had already said; and then the little party remained in moody silence for some time longer, when Brindley suddenly started up, and said: "Don't mind, Duke; don't be cast down; we are sure to succeed after all!" The party shortly after separated, the Duke going over to Worsley to bed, to revolve in his mind the best mode of raising money to complete his all-absorbing project.

The advantages secured by the canal amply rewarded the enterprise and sacrifices of the proprietor. It ultimately yielded an income of eighty thousand pounds a year; it reduced the charge for water-carriage between Liverpool and Manchester one half; it conferred inestimable benefits on the entire community. "The history of Francis, Duke of Bridgewater," said the Earl of Ellesmere, "is engraved in intaglio on the face of the country he helped to civilize and enrich."

The Duke always took a deep interest in his canals, and it was one of his regulations that when any deficiency of supply was apprehended at the coal-yard, the poorer customers should be first served; their number was often very great, and the Duke would come and watch the busy scene. "One day, a customer of the poorer sort, having got his sack filled, looked about for some one to help it on to his back. He observed a stoutish man standing near, dressed in a spencer, with dark drab small-clothes. 'Heigh, mester!' said the man, 'come gi'e me a lift wi' this sack o' coal on to my shoulder.' Without any hesitation the person in the spencer gave the man the required 'lift,' and off he trudged with the load. Some one near, who had witnessed the transaction, ran up to the man, and asked: 'Dun yo know who's that yo've been speaking tull?' 'Naw! who is he?' 'Why it's the Duke hissen!' 'The Duke!' exclaimed the man, dropping the bag of coals from his shoulder, 'hey! what'll he do *at* me? maun a goo an' ax his pardon.' But the Duke had disappeared."

Other characteristic incidents are mentioned of this business-like nobleman. He was very shrewd in the management of even minor matters. He found that the workmen were irregular in returning to their labor at one o'clock, though very punctual in leaving off at noon. They excused themselves by saying that while they heard the clock plainly when it struck twelve, they did not when it struck only once. On learning this, the Duke ordered that the clock should be altered so as to be made to strike *thirteen*, and it does so to the present day. When he had to see people on business, he would go to them rather than receive them, "for," he said, "if they come to me they may stay as long as they please; if I go to them, I stay as long as *I* please."

It is probable that the remuneration Brindley obtained all through his early career, was not more than one third of the present wages of the skilled mechanics; and where modern engineers would receive ten guineas a day, he had two shillings.

It is said that when the Duchess of Marlborough was resisting the claims of one of her Blenheim surveyors, she told him indignantly, that "Sir Christopher Wren, while employed upon St. Paul's, was content to be dragged up to the top of the building three times a week in a basket, at the great hazard of his life, for only two hundred pounds a year." Brindley appears to have fared worse. So much for the rewards the world has too often given to its benefactors!

Meanwhile, the fame of the Duke's canal had spread over the country, and the earthenware and salt manufacturers of Staffordshire and Cheshire were anxious to open up a line of water-communication with the Mersey. The principal materials employed in the production of earthenware were brought from a distance; the flints from the south-eastern ports, and the clay from Devonshire and Cornwall; and first the sea, next the river, and then the pack-horses were the carriers. The expense was enormous, and pressed heavily on the trade, and similar burdens were shared by other manufacturers.

At this time the Potteries had a population of only about seven thousand, the villages were mean, and the houses rudely thatched. When in later years the prosperity of the district had increased, and many of the people had risen in the world, the Rev. Mr. Middleton, incumbent of Stone, thinking it well to admonish his hearers of the duty of humility, on one occasion reminded them, that after all they might be compared to so many sparrows, for they had all been hatched *under the thatch*. One of the most remarkable names connected with this region is that of Wedgewood. Josiah Wedgewood was born in humble circumstances, and might have improved them but little, had he not through disease lost his right leg. During his illness, he mused upon various plans by which to earn a living. When he recovered he made various fancy articles of potter's clay, and studied the improvement of his work as respects color, glaze, and durability. His business extended, and after thirty years he had given employment to many thousand families, and the trade would have more rapidly extended but for the inadequacy of the means of conveyance. The road through the Potteries had been already greatly improved, despite much opposition; but no sooner was a canal suggested to Josiah Wedgewood than he urged its adoption, and took steps for the construction of the Grand Trunk Canal.

The opponents of canals in general, and of this in particular, gathered their forces. They asserted that the roads would be neglected, the breed of English horses destroyed, innkeepers be made bankrupt, pack-horses and their owners be ruined, and the coasting trade come to an end. But the bill passed. The line started from the Duke's canal, near Runcorn, passed by Northwich, Middlewich, and the salt districts, through the lofty range of Herecastle, across the Potteries to Haywood, joined the canal intended to unite with the Severn, then followed the Trent valley, and running to the north-east by Burton and Derby, there was a clear line of navigation to the Humber. By these means the ports of Liverpool, Hull and Bristol were connected.

It is said that when Brindley had some unusually difficult problems to work out, he "lay in bed," and the expression often occurs in his note-book.

"It was a great misfortune for him," says Mr. Smiles, "as it must be to every man, to have his mental operations confined exclusively within the limits of his profession. He thought and lived mechanics, and never rose above them. He found no pleasure in any thing else; amusement of every kind was distasteful to him. Shut out from the humanizing influence of books, and without any taste for the politer arts, his mind went on painfully grinding in the mill of mechanics. 'He never seemed in his element,' said his friend Bentley, 'if he was not either planning or executing some great work, or conversing with his friends upon subjects of importance.' To the last he was full of projects, and full of work; and then the wheels of life came to a sudden stop, when he could work no longer. It is related of him that, when dying, some eager canal-undertakers insisted on having an interview with him. They had encountered a serious difficulty in the course of constructing their canal, and they *must* have the advice of Mr. Brindley on the subject. They were introduced to the apartment where he lay, scarce able to gasp, yet his mind was clear. They explained their difficulty — they could not make their canal hold water. 'Then puddle it,' said the engineer. They explained that they had already done so. 'Then puddle it again and again.' This was all he could say, and it was enough."

John Smeaton was eight years younger than Brindley, and they were often professionally associated together. But the former enjoyed many advantages never possessed

by the latter. Both had great mechanical abilities, but John Smeaton had the inestimable benefits of an excellent home and education. He was born at Austhorpe Lodge, near Leeds, in 1724, his father being a respectable attorney. He early showed a love of contrivance, and his favorite playthings were models of things that would "work." He alarmed his family by being discovered in the act of fixing something like a windmill on his father's barn, and with a piece of bored pipe he fashioned a working pump. He constructed a miniature engine after merely examining a real one, and having tried its powers on the fish-ponds, he pumped them dry, to the consternation of the fish and the chagrin of his father. The latter, however, appears to have indulged the tastes of his son, and provided him with an outhouse, where he manufactured away to his heart's content, and where he made a turning-lathe, and worked in wood, ivory, and metals.

Smeaton's father intended his only son to succeed him in his profession, and the lad appears to have done his best to conform to his father's views. But his heart was set on mechanics, and he at length strongly, but respectfully, represented his feelings to Mr. Smeaton, who acceded to them, though with some natural reluctance, for at that time the profession of a civil engineer was unknown, and mechanical works were executed by millwrights at laborers' wages. Young Smeaton now entered the service of a philosophical instrument maker, and afterward began business on his own account; at the same time associating with men of education and science, and distinguishing himself by his philosophical attainments. Subsequently, he visited Holland and Belgium, and on his return home, in 1755, an opportunity presented itself of making his talents as beneficial as they became conspicuous.

About fourteen miles south-south-west of Plymouth Harbor, some long, low reefs of gneiss, jagged and black, may be seen at low water, over which the dark Atlantic billows roll and eddy. From the earliest times they have borne the name of the Eddystone Rocks. This spot had always been one of danger to the homeward bound, and if they went too far south in order to avoid it, they were in equal peril from the iron shores of the Channel Islands and France. Various rude contrivances had been adopted to light up different points of the coast, and powers were conceded to some private parties to erect lighthouses, and to levy a toll on passing ships. The first attempt to build a lighthouse on the Eddystone was made by a Mr. Winstanley, of Littlebury, in Essex, a gentleman of much mechanical skill, and also of whimsical turn of mind. He began the work in 1696, and finished it in four years. He first drove irons into the rock, and then reared a wooden structure somewhat resembling a Chinese pagoda, with galleries and fantastic projections. The main gallery under the light was so open, that an old gentleman afterward told Mr. Smeaton it was "possible for a six-oared boat to be lifted up on a wave, and driven clear through the open gallery into the sea on the other side." The building was very deficient in the essential quality of strength; "nevertheless," as Smeaton remarked, "it was no small degree of heroic merit in Winstanley to undertake a piece of work which had before been deemed impracticable; and, by the success which attended his endeavors, to show mankind that the erection of such a building was not in itself a thing of that kind." So confident was the architect in its stability, that he is said to have expressed his desire to be in it in the fiercest storm that ever blew. Unhappily his wish was realized. On the night of the twenty-seventh November, 1703, he was in the lighthouse, when a tempest of unparalleled fury burst along the coast. The following morning not a vestige of building or builder remained!

The next architect of Eddystone was a London mercer, the son of a Cornish laborer, one of a family who were "a worthless set of ragged beggars." But John Rudyerd appears to have had an honest heart and great practical skill. Avoiding the errors of his predecessor, he made his building in the form of a cone, dovetailing the massive oak basis of the superstructure into the rock by strong iron branches, and weighting the whole down with courses of Cornish moorstone jointed together and clamped by iron. The building was an admirable piece of shipcarpentry, and it survived the storms that raged for nearly fifty years. It was destroyed by fire in 1755.

We have seen that the first designer of an Eddystone lighthouse was a country

gentleman and mercer, the second a London silk-mercer; the third was John Smeaton, a mathematical instrument maker. He resolved that the new building should be of stone, that the diameter of the base should be larger than before, and that instead of binding the blocks one to another by iron cramps, they should be dovetailed together, so as to lock one into another, and that thus their base would be rooted into the rock. All this he determined before a stone was laid, or even the site visited, since the difficulty of reaching it was great, and time precious. On the second April, 1756, he stood for the first time upon the rock, though even this was no easy matter, and repeated subsequent efforts to visit it were unsuccessful. At length he completed his measurements, returned to London, and made a complete model of the future lighthouse, which was approved by the projectors and the Admiralty.

On the third of August, 1756, the work began. Amid many interruptions and perils, the dovetail recesses were cut in the rock to receive the foundation-stones; the winter was employed on shore in dressing nearly four hundred and fifty tons of stone for the next summer's use, every course of stones involving fresh adaptations, and all the lines being laid out by Mr. Smeaton on the work-room floor. The actual erection commenced in the ensuing summer, and the first four stones were deposited by the sheers on the thirteenth June. For days together the ground-swells and heavy seas interrupted the work, but after the sixth course had been laid, the progress was much more rapid. The separate pieces having previously been hewn, fitted, and numbered in the work-yard, all confusion was avoided, and each stone was laid in its destined position, dovetailed, cemented, and wedged together, so as to bind the whole into one mass. Mr. Smeaton superintended the work, always placing himself in the post of danger, or, as he fairly called it, "of honor." On one occasion he received a dislocation of his own thumb, which had been produced by a fall on the rock, and then proceeded to fix one of the stones of the building. By the end of the season he had the gratification of standing upon the ninth completed course, and had then to leave it to the mercy of six months of wintry Atlantic storms. But when, in the following May, he was able to visit the scene of his labors, Smeaton rejoiced that not a stone had been moved, that the entire work seemed solid as the rock on which it rested. The erection was now resumed, and carried on with few interruptions till nearly the end of September, 1758, when it had risen nearly thirty-six feet from the base, and beyond the heavy stroke of the waves. Here the apartments for the lighthouse-keepers were constructed with circular blocks of stone, twenty-six inches thick, sixteen pieces forming a circle, and all cramped and grooved together.

During the prosecution of the work many anxieties occupied the mind of the engineer, and especially during the winter. In the gray light of many a wintry morning, after a stormy night had passed, Smeaton might be seen standing on the Hoe, at Plymouth, gazing through his telescope in the direction of Eddystone. Wistfully would he sometimes look again and again, doubting whether the prophecies of those who declared that no building of stone would survive upon that rock had not been realized. But he never waited in vain; at length he would see a tall white pillar of spray shoot up into the air, telling him that his lighthouse was safe, and with his mind relieved, he would return to his work-shops. The fourth season was so stormy that the work could not be resumed till July, but every detail having been previously completed on shore, thirteen days witnessed the erection of two entire rooms; and by the seventeenth of August the forty-six courses of masonry were finished, and the last employment of the mason was to chisel the works "*Laus Deo*" upon the stone over the door of the lantern. Under the ceiling had been already cut, "Except the Lord build the house, they labor in vain that built it." A gilt ball surmounted the iron balcony and lantern, and the delicate and dangerous task of fixing the screws Smeaton performed with his own hands, standing on four boards nailed together at the hight of one hundred and twenty feet above the sea. At last the work was completed; the light was kindled on the night of the sixteenth of October, 1759, and its star-like ray has for a century illumined the dark paths of those dangerous seas, and guided the fleets of nations to their desired haven. Sometimes a huge Atlantic wave will roll with tremendous force upon it, making the doors slam, the windows rattle, the building tremble to its base and

echo as with the roar of artillery, and momentarily obscuring the light by the water that dashes over the lantern; but instantly its force is spent, and the clear light beams beneficently across the troubled sea, gladdening the hearts of thousands of the homeward-bound as they hear the cry from aloft, "The Eddystone in sight!"

It has been well said by Mr. Smiles, that Smeaton was a "born mechanic—that he contrived and constructed for the pure love of it." His pursuits in his work-shop and at the desk were varied by visits to the blacksmith's, and being on familiar terms with that worthy, he would sometimes take up the tools and point out to him how a piece of work could be better done. One of his maxims, which he frequently quoted, was, "Never let a file come where a hammer will go." "You know, sir," said the son of Smeaton's blacksmith, who is still living, "workmen didn't know much about drawings at that time a-day, and so, when Mr. Smeaton wanted any queer-fangled thing making, he'd cut one piece out o' wood, and say to my father, 'Now, lad, go mak me this.' And so on for ever so many pieces; and then he'd stick all those pieces o' wood together, and say, 'Now, lad, thou know how thou made each part, go, mak it now all in a piece.' And I've heard my father say, 'at he's often been cap't to know how he could tell so soon when owt ailed it, for before ever he set his foot at t' bottom of his twisting stairs, or before my father could get sight of his face, if t' iron had been wrong, thear'd been an angry word o' some sort, but t' varry next words were, 'Why, my lad, thou s'ud a' made it so and so: now, go, mak another.'"

Smeaton carried out more engineering works than we have time to mention. He was employed on the Calder and Aire navigation, in various drainage works, in bridge-building in Scotland, in designing harbors, including that at Ramsgate, and also in various other departments of civil engineering. The maxim, Mr. Smiles remarks, which governed his life was, that "the abilities of the individual were a debt due to the common stock of public well-being." Robert Stephenson said of him: "Smeaton is the greatest philospher in our profession this country has yet produced. His mind was as clear as crystal, and his demonstrations will be found mathematically conclusive. To this day there are no writings so valuable as his in the highest walks of scientific engineering; and when young men ask me, as they frequently do, what they should read, I invariably say, Go to Smeaton's philosophical papers, read them, master them thoroughly, and nothing will be of greater service to you. Smeaton was indeed a very great man." "The example and precepts of Father Smeaton," said Watt, "have made us all engineers." He died in 1792.

In an old farm-house at Phantassie, in East-Lothian, John Rennie was born, on the seventh of June, 1761, afterward the architect of the three great London bridges, the engineer of the Plymouth breakwater, of the London and East-India docks, and of other works of national importance. He early betrayed great aptitude for mechanical pursuits. When about ten years old he made a fleet of miniature ships, and constructed models of a windmill, fire-engine, and pile-engine; and when only nineteen, he planned the machinery and buildings of some new mills near Dundee, and superintended their construction. Rennie's master was one Andrew Meikle, whose father was the inventor of a machine for "an artificially-created wind"—in other words, a winnowing-machine. The Scotch clergy argued that "winds were raised by God alone, and that it was irreligious for man to attempt to raise wind for himself, and by efforts of his own." One clergyman refused the communion to the raisers of "devil's wind." Andrew Meikle, the son, invented the threshing-machine, by which one per cent of all the corn threshed has been saved. Rennie's first efforts in design were so successful that before he was twenty he was fully employed as a millwright. But being ambitious of rising to a higher professional position, he now joined the University of Edinburgh; he subsequently went over the manufacturing districts of England, and visited James Watt at Birmingham.

Time passed on, and Rennie won fame and emolument in his profession. He fitted engines to the Albion mills at Blackfriars Bridge, and on the retirement of Smeaton, was engaged on canals: among others, on the Kennet and Avon, and Rochdale. He lifted the last from lock to lock over the great mountain ridge, known as the "backbone of England." In 1789 he recommended that the steam-engine of his friend Watt should be employed to perfect the drainage of the Fens. We find him now struggling with what

Mr. Carlyle would call the "Marsh jötuns," and he became one of the greatest of the "slayers of dragons;" this title being given in the Fens to persons who, by drainage works, removed those diseases which were typified as dragons or destroyers. Much of this work remained to be done, for, despite all that had been accomplished in those districts, a thousand acres in Blankney Fen—now a very fertile region—were let by public auction so recently as seventy years ago, on the whole of which the reserved bid was only ten pounds. An immense area of Lincolnshire, north of Boston, often lay under water for months together, and yet corn had risen to almost famine price. One of the most important of the districts which Mr. Rennie first completely drained was that known as Wildmore Fen and West Fen, consisting of forty thousand acres of land. East Fen, with its formidable chain of lakes, was next attacked, and where fish and wild fowl had reigned, the plough turned the furrow. The cost of executing this work was heavy, amounting to £580,000; but in 1814 the improved rental of the land was estimated at £110,561; and allowing interest for the capital sunk, the increased net value of the drained lands was not less than £81,000 per annum, which at thirty years' purchase gave an augmented value of nearly £2,500,000.

In the construction of his bridges, Mr. Rennie paid greater attention to a just theory than his predecessors, to whom it was often a matter of chance whether their erections would stand when the centers were removed. The marked improvements he made in his bridges over the old-fashioned steep arches which had preceded, and the substitution of an almost level roadway, appear to have excited the surprise of those who objected to innovation, and the contempt of at least one observer. When the new Musselburgh Bridge was opened, a countryman passing with his cart was asked how he liked it. "Brig!" was the reply, "its nae brig ava! ye neither ken whan ye're on't, nor whan ye're aff't!"

Among the splendid fabrics piled by this engineer were Waterloo and Southwark Bridges. Of the latter, Mr. Robert Stephenson says that, "as an example of arch construction, it stands confessedly unrivaled as regards its colossal proportions, its architectural effect, and the general simplicity and massive characters of its details." Space forbids us to do any justice to the numerous and magnificent creations of Mr. Rennie's genius. He was engineer of the London and East-India docks; he amended the navigation of the Clyde; effected great improvements at the Grimsby docks; designed the harbor at Holyhead; constructed the Hull docks; planned the new quays and docks at Greenock and Leith; examined, reported on, and improved more harbors than the reader would have patience to read the names of, were we to write them. He perfected the diving-bell; advised the Bank of England on the manufacture of their notes; improved the methods of dredging, and making gunpowder, and ropes; urged the Admiralty to employ steam-power in the navy; erected the Bell Rock Lighthouse; and made war-docks and other works for the Government. But one of the most interesting of all his works was the construction of the Plymouth breakwater.

Plymouth had long been renowned as one of the first commercial, naval, and military stations in Great Britain. Its inner and admirable harbors of Hamoaze and Catwater communicate with the four thousand acres over which the Sound extends its waters, reaching some three miles in every direction. The Sound, however, has always been exposed to the fury of the equinoctial gales, and the shipping that sought shelter from their violence were not unfrequently driven on shore. Various plans had been proposed to mitigate this evil, and at length Mr. Rennie was requested by the Admiralty to report upon them; he did so in 1806. In its original state, the Sound could be entered by three channels—east, central, and west—separated from one another by rocks, the middle one being the most dangerous, and consequently least used. Mr. Rennie proposed that a breakwater should be stretched across this middle one—by which there would be little detriment to the navigation—while the tidal waters flowing through the other channels would deepen them. He stated that the breakwater should be made of large angular blocks of rubble, of from two to twelve tons weight, forming a mass about twenty yards broad at the base, ten at the top, and fifty-one hundred long, the two ends bending inward. The exact angle of repose which the rubble would ultimately assume would be determined by the op-

eration of the forces of nature; "the waves," said Rennie, "were the best workmen."

In June, 1811, the requisite powers were obtained for the execution of this design. Twenty-five acres of limestone were purchased up the Catwater, the quarry was opened, railways were laid down to the wharves, barges were built to convey the stones to their future resting-place, and the lines of the breakwater were marked out by buoys. For two years the work proceeded, until portions of the ridge became visible at low water, and by March, 1814, vessels began to seek the protection which was evidently afforded. By August in the following year, 615,057 tons of stone had been deposited, and 1100 yards of the breakwater were visible above low water of spring-tides; and so gratifying were the results obtained, that it was determined to carry the ridge twenty feet, instead of ten, above the level of low water of spring-tides, so that protection would be furnished both to large vessels and small. The success of the scheme, however, produced undue confidence; Mr. Rennie wished that the seaward slope should be at five to one; the authorities, from economical motives, regarded three to one as adequate. But some severe gales solved the problem, displaced the stones, threw many, of several tons weight, over the embankment into the Sound, and reduced the sea-slope to the angle indicated by Mr. Rennie. The total amount of rubble deposited to the end of 1848, when the work was considered to be completed, was 3,670,444 tons, beside 22,149 cubic yards of masonry—an amount at least equal to that contained in the great pyramid. The total cost of the work was about £1,500,000.

Rennie may be said to have "died in harness, in the hight of his fame, after three-score years, forty of which had been spent in hard work. Work was with him not only a pleasure—it was almost a passion. He sometimes made business appointments at as early an hour as five in the morning, and would continue incessantly occupied until late at night. It is clear that the most vigorous constitution could not long have borne up under such a tear and wear of vital energy as this." Mr. Rennie realized a competency in his profession, though not a large fortune. He justly complained of the remuneration of only three hundred and fifty pounds awarded him by the Kennet and Avon Canal Company for constructing their works. His charge of seven guineas for an entire day's work was objected to even by General Brownrigg, the head of the Ordnance. "Why, this will never do," said the General, looking over the bill; "seven guineas a day! why, it is equal to the pay of a Field-Marshal!" "Well," replied Mr. Rennie, "I am a Field-Marshal in my profession; and if a Field-Marshal in your line had answered your purpose, I suppose you would not have sent for me." "Then you refuse to make any abatement?" "Not a penny," replied the engineer; and the bill was paid.

"Mr. Rennie," says Mr. Smiles, "was a great and massive, yet a perfectly simple and modest man; and though his engineering achievements may in some measure have been forgotten in the eulogies bestowed upon more recent works, they have not yet been eclipsed, nor indeed equaled; and his London bridges—not to mention his docks, harbors, breakwater, and drainage of the Lincoln Fens—will long serve as the best exponents of his genius. The death of this eminently useful man was felt to be a national loss, and his obsequies were honored by a public funeral."

In one of the loneliest nooks of the narrow vale of the Esk, in Dumfries, on a knoll by a deep gully, worn in the hillside, stood the cot of a herdsman and the birthplace of Thomas Telford. The farm stretched over some green hills along the valley of the Meggat, a little burn which falls into the Esk near Westerkirk. From that humble home the eye could see far up and down the winding dale, with its little glens among the hills, each with a gurgling rivulet of peat-brown water percolating through the mosses. "Not far beyond," says Mr. Smiles, "the road ceases, and above it stretch the trackless moors, the solitude of which is only* broken by the wimpling sound of the burns on their way to the valley below, the hum of the bees gathering honey among the heather, the whirr of the black cock on the wing, the plaintive cry of the ewes, or the sharp bark of the shepherd's dog gathering the flock together for the fauld." Thomas Telford was born in this cottage on the ninth of August, 1757, and before the year had ended he was an orphan, left

* This is not the only instance in which Mr. Smiles misplaces the adverb—that common vice of even ordinarily correct writers.

to the care of a brave and not unbefriended mother.

The life of the orphan-boy has been well compared by Mr. Smiles to the course of the little burn by which he was born: first it sprang from the nook in the vale and flowed on to Westerkirk school; then pursued its way to Langholm, thence on, like the Esk, into the wide world. A hearty, cheerful lad, he was known in his native vale as "Laughing Tam," where he tended sheep. When fifteen years of age he learned the trade of a stone-mason. During his apprenticeship, Miss Pasley, a kind elderly lady, was pleased with the ruddy-cheeked, merry mason's apprentice, and lent him books from her library. One of these was *Paradise Lost*, and his delight with it was beyond his powers of expression. "I read," he said, "and read, and glowred; then read, and read again." He taught himself to write, and sometimes helped his friends by penning letters for them. "Capital! capital!" said an old man once, whom he had thus assisted; "well! I say, Tam, Werricht (Wright, a lawyer or 'writer') himsel' couldna ha' written a better!"

Time passed on: he rapidly improved not only in skill in his craft, but in mental strength; he visited places of interest, sketched and composed both prose and poetry. "At length, having acquired," he says in his auto-biography, "the rudiments of my profession, I considered that my native country afforded few opportunities of exercising it to any extent, and therefore judged it advisable (like many of my countrymen) to proceed southward, where industry might find more employment, and be better remunerated. All wished him God-speed on his journey, and, as one of his neighbors remarked, "he's gatten a good trade at his finger's ends." He rode to London on a horse that Sir James Johnstone wished to be taken there; the better to fit him for the journey, his cousin lent him his buckskin breeches, and with a little bundle of "traps" buckled behind, he started on his way. Long after, his cousin merrily told the story of the fit-out, and always took care to add, "but Tam forgot to send me back my breeks."

Telford thus began life in mighty London, with only his clothes, his leathern apron, his mallet and chisels; but he had the skill and resolution to advance. In 1784 we find him engaged in superintending the erection of some buildings at Portsmouth dockyard. The Eskdale mason had evidently risen. Yet he said, "he would rather have it said of him that he possessed one grain of good nature or good sense, than shine the finest puppet in Christendom." And his good feeling is well illustrated in a message to one of his correspondents: "Let my mother know that I am well, and that I will print her a letter soon;" for it was his practice to write his letters to her in printed characters, that she might more readily read them. Mr. Smiles well remarks, that as a man's

> "Real disposition usually displays itself most strikingly in small matters—like light, which gleams most brightly when seen through narrow chinks—it will probably be admitted that this trait, trifling though it may appear, was truly characteristic of the simple and affectionate nature of the hero of our story. He took care also to provide more material comfort for her declining years. 'She has been a good mother to me,' he said, 'and I will try and be a good son to her.'"

Telford now became surveyor for the county of Salop, and in this capacity built a bridge across the Severn, at Montford, near Shrewsbury. He next obtained the appointment of engineer to the Ellesmere Canal Company, at a salary of five hundred pounds a year. This canal consisted of a line from the Dee, with branches in different directions, altogether about one hundred and twelve miles. So changed had public opinion become on the merits of canals since the Duke's labors, that at the first meeting of the Ellesmere projectors, four times the required money was subscribed.

In the construction of this canal very serious natural difficulties had to be overcome, especially in passing through the rugged hill country between the rivers Dee and Ceriog. In order to surmount them, Telford designed two magnificent aqueducts, one across the vale near Chirk, and it is one of the "boldest efforts of human invention in modern times." It consists of ten arches of forty feet span, and the canal is carried by it seventy feet above the level of the river beneath. The other, called Pont-Cysylltau, was spoken of by Sir Walter Scott to Southey as "the most impressive work of art he had ever seen." It crosses the Dee in the vale of Llangollen, and rises one hundred and twenty-seven feet above the lowest part of the valley. Upon the top of the masonry is a

cast-iron trough for the canal, with its towing-path and side-rails all bolted together. The total cost of this part of the canal was forty-seven thousand and eighteen pounds, and it occupied nearly eight years in construction.

"Thus," says Telford, "has been added a striking feature to the beautiful vale of Llangollen, where formerly was the fastness of Owen Glendower, but which, now cleared of its entangled woods, contains a useful line of intercourse between England and Ireland; and the water drawn from the once-sacred Devon furnishes the means of distributing prosperity over the adjacent land of the Saxons."

The proximity of Shrewsbury to the iron and coal districts naturally directed Telford's attention to the employment of cast-iron in bridge-building. Of course, there were those who objected, as there are always objectors to every thing; and when Mr. Wilkinson, an iron-master, insisted on an iron bridge at Coalbrookdale, they said he was "iron-mad." During the time Telford held the office of county surveyor for Salop, he erected no fewer than forty-two bridges, five of which were iron; and so emboldened was he by his success, that in 1801, when it was found necessary to rebuild Old London Bridge, he designed a new cast-iron one of a single arch, of six hundred feet span, with a clear headway of sixty-five feet above high water. Though it would have contained sixty-five hundred tons of iron, and cost two hundred and sixty-two thousand two hundred and eighty-nine pounds, he declared, that if provided with ways and means, and allowed "elbow-room, he saw his way as plainly as mending the brig at the auld burn." The plan "got into mighty favor with the royal folks," and it was generally conceded by competent men that the project was practicable, and preliminary works were actually begun; it was abandoned more especially because of the extensive inclined planes which would be necessary on either shore, and which would involve great cost and depreciation of property.

Mr. Telford also carried out a series of improvements for the drainage of Lincolnshire. In one of these was a district of nearly one hundred thousand acres of fertile land, which had formerly been very ineffectually cleared of its surplus water by windmills and steam-engines. So remarkable was the efficiency of the outfall he constructed, that in a few hours the lowering of the waters was felt throughout the whole of the Fen level. The stagnant drains began actually to flow, and, at a place near Peterborough, some fifteen miles from the sea, the intelligence was whispered to the congregation at church—for it was Sunday morning—that "the waters were running," and congregation and minister hurried forth to see the great sight.

Though fully engaged in great works, Telford did not make the enormous fortune of a successful engineer of our day. He resided so long at the Salopian Coffee-house—now the Ship Hotel—at Charing Cross, that the successive landlords came to regard him as a fixture, and bought and sold him with the good-will of the business. When at length he resolved to have a house of his own, and gave notice of his intention to the landlord, that worthy looked aghast. "What! leave the house?" said he; "why, sir, I have just paid seven hundred and fifty pounds for you." Nevertheless, he removed to Abingdon street, where Labelye, the engineer of Westminster Bridge, had lived, and there remained till he left it at last for Westminster Abbey.

One of the most remarkable circumstances that strike the mind in the review of this subject, is the extreme modernness of English engineering. It is not very long since this country merely grew the raw material for foreign artisans to manufacture; and our efforts in science and construction were regarded with contempt. Although we were islanders, we had scarcely any navy; and the Dutch caught our fish in our seas, and sold them to us in our markets. "You English," said the Dutch fishermen, "we will make you glad to wear our old shoes." Till nearly the close of the last century, our only fishing was carried on from little cobbles, close in shore. None of our great natural harbors had a single pier until a recent date, and the smaller ports were in constant danger of being choked up by shingle. Our lighthouses also are amongst the triumphs of modern engineering. The means of crossing our rivers were so inadequate, that accidents were of constant occurrence; and Gilpin graphically describes the perils of a voyage across the Bristol Channel in 1770. Even a British Admiral who arrived at one of these fer-

ries, and intended to cross, having watched the boat work over from the other side, declared that he dared not trust himself to the seamanship of such fellows as managed her, turned his horse's head, and rode some fifty miles round by Gloucester. At the time when Holland had a magnificent system of water-communication, and when France, Germany, and Russia had important lines of inland navigation, England had about the worst roads in Europe, and not a single canal cut. The reply of the man with a wooden leg, who was offered a lift upon a stage-coach, would have been appropriate to almost any part of the land till a comparatively recent period: "No, thank'ee, I can't wait; I'm in a hurry." Road-work, as a profession, was unknown till the time of Metcalf, and Mr. De Quincey mentions a case, even in the present century, where a post-chaise of the common narrow dimensions was obliged to retrace its route for fourteen miles, on coming to a bridge in Cumberland that was too narrow by three or four inches to allow it to pass. "Those who are born to modern traveling," said Lord Cockburn, "can scarcely be made to understand how the previous age got on." Our first lessons in manufactures were taught us by foreigners: French and Flemish refugees instructed us in cloth, silk, and lace work; the Dutch brothers, Elers, began the art of pottery; Spillman, a German, erected a paper-manufacturing mill; and Booman, a Dutchman, brought the first coach into England. Our earliest ships were built by Danes or Genoese; the Dutch made our wind and water-mills, and pumps, dug our great works of drainage, and repaired our river banks; and the art of bridge-building had sunk so low in England, that in the middle of the last century we were under the necessity of employing the Swiss engineer, Labelye, to erect Westminster Bridge. Hence it comes to pass that when Mr. Smiles sits down to write the history of English engineering, his subject is nearly all included in a hundred years. Vermuyden came to England in 1621, but Metcalf was not born till 1717, Edwards in 1719, Brindley in 1716, Smeaton in 1724, Rennie in 1761, and Telford in 1757; and of course they did not accomplish their great engineering works till years had matured their minds. Surrounded, as we are in these days, by monuments of engineering skill, erected at boundless cost, with admirable roads running in all directions, and crossing rivers at convenient distances, by solid and handsome bridges; with a system of canal navigation that has, we believe, left no place in England south of Durham more than fifteen miles from water-communication; with railways to every town of importance; with harbors and docks to welcome, and breakwaters to shelter, and lighthouses to warn our ships around the coast, and all these having become the most commonplace facts, we almost fancy that they are as old as they are familiar, and can hardly imagine that they are nearly all the creation of a century. We look back across the thousands of years through which the earth has stood; we think of the twenty centuries that have elapsed since the history of our isle and our fathers can be traced, and then are amazed to learn that almost all these great products of engineering skill, which have become indispensable to our comfort, and, as we almost fancy, to our existence, are the creation of the last hundred years. No wonder Mr. Smiles should remark, that "it may possibly excite the reader's surprise to learn how very modern England is in all that relates to skilled industry, which appears to have been among the very youngest growths of our national life."

But the recency of these works renders their rapid increase only the more remarkable, and should make us more thankful that we are permitted to enjoy them. For the advantages thus secured have extended far beyond the districts immediately concerned: they have enriched the country at large. A humble Fen poet of the last century quaintly predicted some of the moral results which would arise from the reclamation of land in those regions:

> "With a change of elements, suddenly,
> There shall a change of men and manners be;
> Hearts thick and tough as hides shall feel remorse,
> And souls of sedge shall understand discourse;
> New hands shall learn to work, forget to steal;
> New legs shall go to church, new knees to kneel."

The prophecy has been fulfilled. "The barbarous race of Fenmen has disappeared before the skill of the engineer. As the land has been drained, the half-starved fowlers and fen-roamers have subsided into the ranks of steady industry; become farmers, traders, and laborers. The plow

has passed over the bed of Holland Fen, and the agriculturist reaps his increase more than a hundredfold. Wide watery wastes, formerly abounding in fish, are now covered with waving crops of corn every summer. Sheep graze on the dry bottom of Whittlesea Mere, and kine low where not many years since the silence of the waste was only disturbed by the croaking of frogs and the screaming of wild fowl. All this has been the result of the science of the engineer, the enterprise of the landowner, and the industry of our peaceful army of skilled laborers."

Thus it has been with our inland navigation. The first boat-load of coals passed over the Barton aqueduct on the seventeenth of July, 1761—a hundred years ago. But the effects of the construction of the Bridgewater Canals were not restricted to that locality, or even to the towns and trade of Manchester and Liverpool. Their introduction to the Pottery districts accomplished a revolution. They soon carried 50,000 or 60,000 tons of clay and flints into Staffordshire every year, and the total outward and inward tonnage is now upward of 300,000 tons. Even during the interval between two visits paid by Wesley, he saw a marvelous improvement: "I returned to Burslem; how is the whole face of the country changed in about twenty years! since which inhabitants have continually flowed in from every side. Hence, the wilderness is literally become a fruitful field. Houses, villages, towns, have sprung up, and the country is not more improved than the people."

Similar influences spread over the land. A new impulse was given to the activities and hopes of the people generally. Other towns sought similar advantages; extensive manufactories sprang up or enormously increased in the Potteries, in Birmingham, Wolverhampton, and around; agriculture was benefited instead of being injured, as some had anticipated; the augmented inland navigation promoted both the coast and foreign shipping trade, so that in the thirty years that followed the opening of the first canal—during which the main canals had united the inland towns with the seaports—the tonnage of English ships increased three-fold, and the number of sailors had doubled. Since the Bridgewater Canal has been opened, the country has been traversed by 2600 miles of canal in England, 276 miles in Ireland, and 225 in Scotland—3100 miles in all—at a cost of about £50,000,000. "At the beginning of the present century," says Dr. Aiken, writing in 1795, "it was thought a most arduous task to make a high-road practicable for carriages over the hills and woods which separate Yorkshire from Lancashire, and now they are pierced through by three navigable canals."

Nor has the value of our canals been diminished by the subsequent introduction of railways. It was predicted that within twelve months of the opening of the Liverpool and Manchester line, the Bridgewater Canal would be closed and would be filled with rushes; but these anticipations have been falsified. Thus, in 1835, before the opening of the London and Birmingham line, the through tonnage on the Grand Junction Canal was 310,475 tons; and in 1845, after the railway had been opened for ten years, the tonnage carried on it had increased to 480,626. Not less than 20,000,000 tons of traffic are estimated to be conveyed annually upon the canals of England alone, and the amount steadily increases.

Similar results accrued in Scotland. So recently as 1761, the Lothians of Scotland, now perhaps the finest agricultural district in the world, had but here and there an inclosed patch of ill-cultivated ground, while the remainder was moor-land and bogs, on which hardly black cattle picked up a poor subsistence; while not a blade of wheat was grown north of the Lothians. People flocked from Edinburgh to see the novel spectacle of a field of that grain in their own neighborhood. Loads even of manure and peat were carried on horseback, or by the farmer or his wife on their backs; and the Edinburgh market was overstocked by the meat of ten wethers. The physical condition of the people was necessarily miserable. "The entire country," says one writer, "was little better than a baren waste." There were hardly any roads; in wet weather the tracks became mere sloughs, and the trade between towns was conducted by "cadgers," who took their goods on horses' backs. The first vehicle that plied between Edinburgh and Glasgow was not started till 1794, and it performed the forty-four miles in two days. "There was no mail-coach north of Aberdeen," says Lord Cockburn, "till, I think, after the battle of Waterloo."

In 1802, the Government requested Mr.

Telford to make surveys of Scotland, and report on the means of improving the bridges and roads; and he stated, in detail, the wretched condition of the country, and the means necessary for its amelioration. In the following year, a series of practical improvements was commenced, which led to the construction of 920 miles of roads and 1,200 bridges throughout the Highlands—half at the cost of the Government, and half to be defrayed by local assessment. The impulse thus given led to the formation of numberless county roads, the landowners of Sutherland alone making 300 miles at their own cost.

The effects of these improvements were immediate. Agriculture was developed. Instead of manure being carried on women's backs, it was conveyed in carts, for the roads were practicable. Cottages took the place of mud-biggins; the dunghill was put outside the house; tartan tatters were exchanged for the woolens of Glasgow and Manchester. The plow superseded the crooked sticks, headed with iron, that had been employed; improved tools were introduced; wheelwrights, cartwrights, and skilled artisans came into existence; trade flourished in new directions; illicit distillation gave way to honest callings; indolence was exchanged for industry; and the moral habits of the working classes were ameliorated. Referring to the beneficial results thus produced, Mr. Telford said: "I consider these improvements among the greatest blessings ever conferred on any country. About £20,000 has been granted in fifteen years. It has been the means of advancing the country at least a century." Yet it was not till the beginning of the present century that Telford made his survey.

Similar advantages were secured, by the same means, for Wales. As an illustration of the state of the roads, we may mention that, so late as 1803, when the late Lord Sudeley took home his bride from the neighborhood of Welshpool, only thirteen miles distant, their carriage stuck in a quagmire, and they had to proceed on foot. In 1808, the post-office authorities wished to put on a mail-coach between Shrewsbury and Holyhead; but it was found that the roads were dangerous even for a riding post, the legs of three horses having been broken in a week. The badness of the ways kept the people poor, and the poverty of the people prevented their providing roads. At length, in 1815, a commission was appointed to make a new Shrewsbury and Holyhead turnpike, and no pains were spared to render it as perfect as possible; and from that time the physical well-being of the principality has been rapidly advancing. But we must hasten to a conclusion.

Such are the men and things with which Mr. Smiles deals. By his narrative, he has better instructed us in our obligations to our benefactors. The whole theme is full of interest to all orders of mind. And in using his materials, Mr. Smiles has labored to make his work as complete in every respect as possible; and in an interesting style, he tells us a multitude of facts we are glad to hear. He has availed himself of many original resources; the life of Brindley has been derived from the family papers and from Brindley's pocket memorandum-books; the materials for the biography of Rennie were chiefly obtained from Sir John; the life of Telford has been compiled from a large collection of that engineer's letters to his friends in Eskdale, and the author mentions that he has had rather to compress than to expand the materials at his disposal. He has been efficiently supported by his artist. If the birthplace of one of the heroes of this story is named, we have the exact region indicated by an extract from the Ordnance map, and the home scenes and engineering works are depicted in excellent and very numerous illustrations. Author, artist, engraver, printer, and even paper-maker have evidently done their best to instruct and gratify the reader.

From McMillan's Magazine.

ELECTRICITY AT WORK.

BY DR. T. L. PHIPSON, F.C.S. LOND., MEMBER OF THE CHEMICAL SOCIETY OF PARIS, ETC.

Six hundred years before the Christian era, Thales accidentally observed that when a piece of yellow amber was rubbed "it became," to use his own language, "possessed of heat and life, and attracted pieces of straw, as the loadstone attracts iron." That was all the ancients knew concerning electricity. They did not observe, or rather they made no experiments. No one ever dreamt of rubbing other substances than amber, or it would have been discovered that the latter is by no means singular in this respect.

In this obscure state did the nascent science of electricity remain, until the time when Dr. Gilbert, medical adviser to Queen Elizabeth, discovered that the attractive property observed by Thales could be communicated to other bodies besides amber, and established a number of new and important facts by a series of careful experiments. But Dr. Gilbert, like most men of genius, lived before his time; his wonderful work, *De Magnete*, was enjoyed only by the select few, nor did it create any sensation till after the publication, in 1671, of Otto de Guéricke's work, *Experimenta Magdeburgica*. Then, indeed, was the science of electricity born. The learned burgomaster of Magdeburg, the inventor of the air-pump, also invented the first electric machine, in the shape of a globe of sulphur, about the size of a child's head, mounted upon a stand, and which rubbed, whilst revolving, against the hands of the experimenter.

In 1727, an English philosopher, Grey, found that the electricity produced by rubbing glass can be communicated by contact to other bodies, such as cork, wire, etc., though the latter do not become electric by being rubbed. The machine invented by Otto de Guéricke gave small sparks visible in the dark. Later, in 1743, Winckler of Leipzic was experimenting with a similar machine, in which he had replaced the globe of sulphur by a glass globe, which rubbed against an elastic cushion; and, in January, 1744, at the first meeting of the Academy of Sciences of Berlin, in presence of the Court, the sparks from this machine were, to the astonishment of all present, made to inflame a quantity of ether in a glass cup. "Thus," says Professor Dove, "the light that was kindled in Magdeburg determined combustion for the first time, seventy-three years later, and that in the town of Berlin."

Experiments now multiplied unceasingly, and it would require volumes to enumerate even the more important of them. Minerals, plants, animals, man himself—every thing was submitted to the action of this subtle "fluid," as it was called; and it was in attempting to electrify the liquids, mercury and water, that the celebrated Leyden jar and other *condensers* of electricity were discovered. Hence arose electric batteries and their wonderful results. Metals were fused and volatilized, animals and plants killed, the nature of lightning discovered, etc.

Already, in these earlier periods of the science, the experiments of Benjamin Franklin, Winckler, and Nollet, had placed beyond doubt the true nature of the lightning flash; and Franklin showed us how we might avoid its terrible effects, by means of the iron rods now called "lightning-conductors." At the same time, a French physicist, Dalibard, desiring to verify Franklin's opinion, actually made the experiment at Marley, in 1752. Franklin, who had recommended this experiment to his fellow-laborer in Europe, because he could not find means of accomplishing it in America, did not, however, wait to hear the result. In 1753, he took his son into a field, as a storm was approaching, and flew a kite,

to which he had previously affixed a metallic point. At first he got no results; but, when the rain began, the string becoming wet, and consequently a better conductor of electricity, he obtained small sparks upon a key, to his inexpressible joy. But had Franklin used, as a string for his kite, a thin wire of metal, or introduced such a good conductor into the string, it is probable that both he and his son would have paid with their lives the expense of this dangerous experiment. Such a death, indeed, happened to Richmann, of St. Petersburg, whilst experimenting on atmospheric electricity by means of a long iron rod. But, "no risk, no gain," as the saying goes; and from these observations arose the useful application of lightning-conductors, which of late years have been brought to their greatest degree of perfection for ships by Sir W. Snow Harris, of Plymouth. When a silken string that has been gilt is submitted to an electric discharge, the whole of the gold is volatilized as a violet-colored vapor, but the silk remains unhurt. So, in Sir Snow Harris's principle of lightning-conductors, he puts into communication, by copper conductors, all the metallic elements of the ship, so that, when a discharge occurs upon a vessel thus protected, the electric vibration is dispersed over a large space at once, and its explosive power counteracted. Experience has taught us, indeed, that a single iron rod, in such circumstances, can have but little power in presence of the electricity accumulated in some hundred acres of clouds.

It appears to me—and I believe François Arago held the same opinion—that, if a few high towers, surmounted by very long metallic rods, communicating properly with the earth, were erected to the south-west of our European towns, the latter would rarely or ever be troubled by storms. Such an arrangement would prove especially beneficial to such towns as Brussels, Dresden, or in the south of France, where storms come on suddenly, and sometimes with remarkable energy. Indeed, it is said that the French philosopher, Charles, amused himself more than once in arresting the progress of a storm already begun and approaching Paris, by sending up a large kite with a metallic string. The wooden stand to which this kite was attached is still preserved in the *Conservatoire des Arts et Métiers*, at Paris; the wood seems to have been literally roasted by the numerous electric discharges that have rained upon it. It is, indeed, evident that we have at our command means of allaying storms. Several experiments made by Dr. Lining, at Charlestown, in America, and by M. de Romas, at Nérac, in France, place this matter beyond doubt. Arago himself declared that the problem of transforming thunder-clouds into ordinary clouds had been solved. Now, by subtracting their electricity, we prevent such clouds from forming hail; and, to give some idea of what importance it would be, in certain districts, to establish a catching agency of balloons, kites, or towers, with metallic rods, it will suffice to mention that not a year passes without a series of terrible storms breaking over the south of France. The hail damages the crops to such an awful extent, that at Rieux, Comminge, Lombez, etc., it is not unusual to see half, and sometimes three quarters, of the crops destroyed in this manner. Some years ago, an official report stated the damage in the south of France, after one storm, to amount to twenty-five millions of francs, (one million pounds sterling.) The kites which M. de Romas flew at Nérac, the strings of which were surrounded by fine copper wire, effectually subtracted electricity from the storm-clouds; and, whilst his experiments lasted, no lightning was seen nor thunder heard. These kites rose only one hundred and sixty yards, or thereabouts, into the air; and yet, in presence of comparatively small thunder-clouds, M. de Romas drew from the extremity of his cords flashes of lightning, seven, nine, and ten feet in length. Thirty such flashes were extracted by him in less than an hour, besides a number of lesser ones, about two yards long.

Electric sparks have been very frequently employed in medicine. It is said that slight electric shocks, from a weak battery, are beneficial in rheumatic and paralytic affections; and I have seen them resorted to with beneficial (though transient) effects in such cases. Several cases of perfect cures in this class of affections are, however, on record; as well as cases of alleged cures of other ailments.

The electric battery has been proposed by a Belgian author, the late M. Jobard, as an elegant substitute for the guillotine!

Another useful application of the electric spark is in the analysis of gases, for which purpose it is frequently resorted to by chemists. But numerous and important applications of electricity, such as the electric telegraph, electro-metallurgy, etc., were not made until after the discovery of Galvanism — electricity of contact, or electricity flowing in circuits.

The researches of Galvani were not due to hazard, as the common legend would make them; they date from 1772, as is seen by the MSS. deposited by him at the Institute of Bologna, and duly registered by the Secretary. On the twenty-second April, 1773, his paper "On the Muscular Movement of Frogs" was presented to that Academy. There also is to be seen his first MS. upon the contraction of frogs' muscles by "artificial" electricity; it bears the date 6th November, 1780, and in it he says "the frogs were prepared as usual" — an expression which proves that this was not the first time he had experimented with them.

Galvani found that when a nerve and a muscle of a frog's leg are brought into contact, a contraction ensues; that, when the nerve and the muscle are connected by a metallic wire, a contraction likewise occurs; and that, when *two* different *metals* are used in these experiments instead of *one*, the contractions are much stronger. Volta was the first to repeat these experiments; and this last fact struck him so forcibly, that it eventually led him to the discovery, in August, 1796, of the instrument which bears his name. The Voltaic pile consisted, then, of plates of two different metals brought into contact; by multiplying the number of these plates, (which was originally *two* only,) and separating them with pieces of damp cloth, the pile was formed. The cloth was soon replaced by an acid liquid, as imagined by Volta himself; and, a little later, Cruickshank gave the apparatus the form of a trough, divided into cells by a series of pairs of metallic plates, into which was poured an acid solution. In more recent times, the apparatus has been modified and improved in a hundred ways; and we have Daniell's pile, Grove's battery, Bunsen's battery, and many others capable of producing very powerful effects. Economy has been studied also in the construction of these wonderful instruments.

By these successive discoveries, man was placed in possession of a new power of extraordinary capabilities — an agency producing light and heat such as were never before equaled in intensity, and possessing a decomposing action upon chemical compounds which he had never before been able to separate into their elements. Not long after Volta's discovery, Nicholson and Carlisle decomposed water, by means of a pile of zinc and silver plates, and saw hydrogen gas evolved at one pole whilst oxygen united with the metal at the other. Then followed Davy's grand discovery of the alkaline metals, and a host of remarkable facts of great importance to chemistry.

But another interesting discovery remained yet to be made before we realized the full benefits of this comparatively new agent. It was that made by the Danish philosopher, Œrsted, in 1820, who found that wires which carry an electric current have a curious action upon magnets. If an electric current passes over a magnet pointing north-south, the latter immediately turns east-west, and remains in that position so long as the current lasts. Davy soon found that the wires which carry an electric current are in reality magnetic, and capable of creating artificial magnets, (the principle of the electric telegraph.) Then follow the remarkable researches of Ampère, Faraday, and W. Thomson, which bring our knowledge of electrical force to its present advanced state. The most powerful magnets are produced instantaneously, by simply causing the voltaic current to circulate round a piece of soft iron; and, by the aid of such powerful electro-motors, we obtain the utmost effects that electricity can realize.

It is curious to note the gradual rise of electro-plating, after the chemical properties of the Voltaic pile were known. Long ago it had been observed that, when an iron bar was plunged into a solution of copper, the latter metal was precipitated upon the iron. A German, named Wach, appears to have been the first to show that copper could be thrown down from its solutions by the electric current; and, in 1837, M. de la Rive found that copper could, in this manner, be made to cover bodies placed in the solution, and model itself upon their forms. However, the observations of these authors seem to have been little heeded; and it was not until Spencer, in England, and Jacobi, at Dorpat, succeeded, almost sim-

ultaneously, (and in ignorance of each other's experiments,) in reproducing medals, etc., by means of electricity, that this new and important art sprang up. Electro-gilding is a little older: it was discovered by Brugnatelli, a pupil of Volta's, who, in 1803, found that gold could be precipitated upon objects in an alkaline solution of that metal, by means of the Voltaic pile. The process was afterward perfected by M. de la Rive, Elkington, Smolz, and several others. The advantages of this happy application are too well known to need mention here. Before its discovery, gilding was performed by means of mercury, and the operation was both costly and unhealthy. In the electric process, the quantity of gold deposited is exceedingly minute, and adheres so firmly, that the object gilt presents the same advantages as if it were of solid gold. Upon a silver spoon, for example, the quantity of gold deposited is worth about threepence; and gilding upon brass is cheaper still.

By the same active electric current faithful copies, in metal, of statues, bas-reliefs, medals, etc., are successfully obtained. Not only can any one metal be thus deposited upon another, but they can be made to adhere, in thin layers, to wood, porcelain, cloth, etc. In Paris many of the large and apparently *bronze* statues that decorate the town are merely *cast iron*, which has been covered with a layer of copper of the required thickness by means of the electric current. M. Oudry, whose work-shops I visited not long ago, has thus covered several statues, fountains, monuments, etc., in France. The process consists in covering the iron statue with a sort of varnish, which appears to be a mixture of plumbago and some other matter, and immersing it in a vast bath of sulphate of copper. The statue is put in connection with one pole of the battery, whilst the other plunges into the liquid. Copper is uniformly deposited, and the coating may be obtained of any thickness. Our readers will readily judge of the enormous difference between the costs of a bronze statue and a cast-iron one coppered by electricity. And yet the latter, after being rubbed with a mixture of plumbago and oxyd of iron, is scarcely distinguishable from real bronze, and is, to all appearance, quite as durable as the latter.

The roofing of houses, by means of copper deposited by galvanism on linen, is another ingenious application of the useful electric current. The introduction of flat roofs in modern edifices renders the adoption of a metallic covering necessary. Iron rusts too soon, lead is too heavy, copper too expensive, and zinc dangerous in case of fire, as it ignites with violence. But, by soaking linen in gas tar, covering one of its surfaces with plumbago, and depositing a thin layer of copper upon this coating, by means of the electric current, we have the very article we could wish for. In like manner printing type, and blocks for engraving, etc., are produced by writing with varnish upon a metallic surface, and then depositing copper upon the parts not protected by the varnish.

Calico-printers have also availed themselves of the electric current in various ways; for instance, in dyeing in figures upon cloth. In this process the required pattern is engraved upon a metallic block, and the cloth moistened with a weak acid solution. The cloth is then placed upon a sheet of tin foil, or other conducting surface. The metallic block is now connected with the positive pole of the battery, and the tin foil with the negative pole. As soon as the engraved metal block touches the acidulated cloth, the exposed portions of its metallic surface are dissolved and incorporated with the cloth, impressing on it the given pattern; the latter, though invisible, comes out, as if by magic, when the cloth is afterward passed into the ordinary dyeing solutions.

But I should never finish were I to attempt to enumerate here even the more important only of the useful applications of galvanism. When it was discovered that a wire through which an electric current circulates is capable of magnetizing iron immediately, the electric telegraph became a possibility which was not long in being realized most completely, by the distinguished Wheatstone. When such a wire, however long, circulates at one of its extremities round a piece of soft iron, the iron instantly becomes a powerful magnet capable of attracting another piece of iron. So that if I stretch a wire from London to Edinburgh, and if at the latter place this wire circulate round a piece of iron, and then, in London, I send a current of electricity into that wire, the piece of iron at Edinburgh instantly becomes a magnet, and will draw toward it another piece of iron in its neighborhood. Such is the principle of the electric telegraph. The motive-power, set up in London and

carried on, in an instant, to Edinburgh, being once given, it was the affair of the mechanic to transform this motion into any shape he might think proper, and so establish a system of signals.

The electric clock is based entirely upon the same principle; and by means of this ingenious apparatus and a sufficient number of wires, the Observatory of Greenwich might give the exact Greenwich time to every town, or even to every house, in Britain at once.

In the electric light we have another useful effect of the galvanic current. It is produced when the two wires of a powerful battery terminate in charcoal points, which are held in proximity one to the other. As the electric current passes from one of these points to the other, it produces an intense light. When it was attempted to light shops and streets by means of this powerful luminosity, it was found too intense to be borne with impunity by the eyes. On the contrary, it is extremely useful for illuminating large public works carried on at night, or for signaling through the dark, etc. For signaling, Professor Way's mercurial light appears to be preferable, on account of its steadiness. It differs from the other only in that the electric current flows over a thin vein of running mercury instead of from charcoal.

M. Jacobi, in Russia, M. Froment, in France, and many others, have constructed a great variety of machines worked merely by electricity. Some of these are certainly very ingenious. I have seen in Froment's work-shops almost every description of machine, from pumps and mills to pianos and organs, all working admirably by means of a single electric current. It is hoped, no doubt, that the day will come when this force will be able to compete with steam; but that day has not yet arrived! However ingenious the disposal of the electro-magnets, not only the question of cost, but that of power, has hitherto been in favor of steam. In the latter case, we burn coal to produce the steam; in the former, we consume zinc in the battery to produce the current: but, as we have already burnt coal to produce the zinc, our readers will understand that competition is impossible until we have discovered a battery of great power and slight cost. Such is the problem which at present occupies more than one electrician.

How would it be if we produced electricity by burning coal? Such has, indeed, been recently effected. It is known that, when the poles of a magnet are made to revolve before the poles of another magnet at rest, an electric current is set up. Now, imagine a set of enormous horseshoe magnets fixed in a stand, and a wheel loaded with a number of solid iron cylinders revolving before them, and the motion being produced by a small steam-engine. Such is the apparatus that, for some time past, has darted the electric-light over the ocean waves at South-Foreland, under the superintendence of Mr. Holmes; and such an one did I see in active operation at Neuilly, near Paris, about two years ago. The current thus produced is a very powerful one, and the cost resides in the amount of fuel consumed. But, even in these advantageous circumstances, it has been found that electricity can not compete with steam as a motive power. However, there is no cause to grumble. How many things has electricity realized that steam can never realize?

The method generally used for blasting rocks, or firing mines, by means of a slow-match, is not only dangerous, but uncertain. Now, many years ago, Franklin had an idea that this operation could be advantageously performed by the electric current. Although this appeared simple enough at first, it was some time before the idea could be turned to account practically. That the thing is thoroughly practicable, however, was amply seen when the submarine cable was laid between Dover and Calais: a cannon placed upon the cliffs of Dover was shot off by the electric spark of a battery at Calais. But this wonderful experiment could only be performed with a battery composed of a hundred and forty Bunsen's elements. At present, Mr. Statham and Vicomte du Moncel have invented apparatus, by means of which mines can be exploded with a very much smaller battery. When no great obstacles lie in the way, it is doubtful whether we need have recourse to them; for blasting rocks, even under water, can be effected by passing an extremely fine and short piece of platinum wire through the body of the charge, contained in a water-tight cartridge. When the current passes through this wire, the latter glows with an intense red-heat, and explodes the charge.

Rheumatic and other patients have re-

ceived benefits from the electric current flowing from a weak apparatus, so as to deliver a series of mild shocks to the parts affected; and recently electricity has been applied, in an ingenious manner, to extract poisonous metals, such as mercury, lead, etc., from the human body. To effect this, the patient is placed up to his neck in slightly acidulated water, in a zinc bath, isolated by gutta-percha, and being isolated himself from the sides of the bath by a gutta-percha seat. Holding in one hand the positive pole of the battery, gold, silver, mercury, etc., flow from the pores of his body, and fix themselves on the sides of the bath, which constitutes the negative pole. These experiments were tried in New-York in 1852, and communicated to the Academy of Medicine at Paris in 1853, by MM. Vergnès and Poey. A patient that had taken mercury fifteen years before the experiment had a considerable quantity of that metal extracted from his body in this electric bath.

It has been proposed to extract silver, gold, and mercury from their ores in a similar manner. Becquerel, in France, has undertaken to treat this subject, and has, indeed, resolved the problem in a scientific point of view; but the process has not yet been put in operation practically.

I pass over hundreds of experiments, some of which have already had their practical results, while others promise to become useful hereafter. I shall conclude this paper, by relating briefly an experiment of my own. Reflecting upon the powerful decomposing chemical force with which we are furnished by the electric current, it occurred to me that I might be able to render sea-water potable, by decomposing and extracting its salt, by means of a moderately powerful battery. The experiments were made in Ostend a few years ago. My apparatus consisted of three vessels containing sea-water; the center one contained the water to be operated upon, the two others communicated with the two poles of the battery. The three vessels were connected by two bent Ω tubes filled with sea-water. As the only battery I could procure in Ostend was rather weak, I passed the current through the water for about fourteen hours, after which one of the outside vessels had become acid and the other alkaline. The sea-water was then filtered through charcoal, and was nearly drinkable. It would have been, I doubt not, quite potable had the battery employed been more powerful. As it was, I found it difficult to extract the last particles of salt; and the water, after subsequent trials, still presented a slightly brackish taste. I have not had an opportunity of repeating this experiment since; but, from the results obtained, I think it probable that sea-water may be rendered potable by means of the electric current.

From Fraser's Magazine.

THE REIGN OF TERROR.*

PART I.

THE new work which now lies open before me is called *Histoire de la Terreur*. The nature of a tragic volume is spoken by this title-page: it strikes upon the memory like a tolling bell; reviving images of pain and disease which end in death. It is a homily on the misery and the depravity of human nature: it affects the nerves like a sentence of condemnation.

The history which this book is to disclose, comprising the period of the Great French Revolution from the year 1792 to 1794, is the cruellest to be found in the annals of mankind. It is the history of

* *Histoire de la Terreur*, 1792–1794: *d'après les documents authentiques et des pièces inédites.* Par M. MORTIMER-TERNAUX. Paris. 1862.

persecuted innocence and of ruined greatness; of love replied to by hatred; of religion and virtue trampled down: but as long as humanity is moved by compassion for a great tribulation, as long as it is touched with awe by a signal change of fortune, as long as it is stirred by the contemplation of a brave endurance, as long as it acknowledges sympathy with a perfect Christian patience, so long will men be led to ponder upon these records; and for this reason M. Ternaux's book will be received with eagerness, and read with interest. This volume is only the first portion of an unfinished work, and therefore any present criticism would be premature. I am not, then, writing as a critic, but merely seeking to convey to my readers some distinct abstractions from the mass of impressions gradually accumulated and stored up in the memory, which have been revived and augmented by M. Mortimer-Ternaux. The hand that summons these thoughts to present activity, and leads them out in a moving procession, is directed by a heart with whose feelings I am proud to find my own in unison; a heart which revolts against cruelty and oppression, and which has courage to plead a righteous cause. M. Ternaux speaks in his preface with just indignation of a party, of which M. Louis Blanc is the most distinguished member, who would palliate the excesses of the French Revolution — who would glory over its atrocities, and represent Robespierre and Danton as its martyrs. His tone is temperate: he does not think that a protest against crime can require the aid of inflated periods; and he concludes with the belief that a candid relation of the facts of the case will suffice for the merits of his cause. I hope he is doing no more than justice to his country by this faith—I hope that if, in a period of feverish convulsion, it was guilty of an immense iniquity, its citizens will not now in a cooler hour steep themselves more deeply in that guilt by upholding it as a virtue—I hope that only a small minority among existing Frenchmen are prepared to do this—I hope that only few can be found to preach the doctrines of Ferocity —I hope that France is not to wear an eternal stain. I will not believe that a great nation is capable of deliberately adopting Terror for its creed, and Robespierre for its idol.

I have before me at the present moment a portion of the correspondence of some of the most distinguished men of the France of 1793, which may serve as a fair sample of their humanity.

For example: "Dear citizen, eighty heads have rolled down from the scaffold to-day, and there may be a hundred tomorrow. *Quel Délice.* How delightful!" And what were these enemies whose bleeding heads constituted such a precious spectacle? Were they dangerous foes, foreign invaders? were they taken sword in hand? was there any thing like an equal chance between the destroyer and the destroyed? There was not! there was silence and submission. The King perished, a victim to his horror of a civil war. Well-intentioned, but weak, by his very terror of bloodshed, he was the cause of that full flow which swelled into a deluge, which made all the gutters of Paris run purple, and which swept into its hideous current by thousands such poor innocent, harmless existences as those whose names follow here, copied from the official *liste des condamnés:*

"Jean Julian, wagoner, for having cried 'Vive le Roi,' condemned to death.

"Jean Baptiste Henry, aged eighteen, journeyman tailor, convicted of having cut down a tree of liberty, executed September 6th, 1793.

"James Duchesne, aged sixty, formerly a broker, since a servant; John Savage, aged thirty-four, gunsmith; Françoise Loizelier, aged forty-seven, milliner; Melanie Canosse, aged twenty-one, milliner, and Marie Madeleine Visolle, aged twenty-five, female hairdresser; all these, convicted of having, in the city of Paris, where they resided, composed writings, stuck bills, and *poussé des cris*, were condemned to death, and executed the same day.

"Genevieve Gounon, aged seventy-seven, sempstress, convicted of having been the author or accomplice of various conspiracies formed since the beginning of the Revolution by the enemies of the people and of liberty, tending to create civil war, to paralyze the public, and to annihilate the existing Government; condemned to death the eleventh of May, and executed the same day.

"François Bertrand, aged thirty-seven, tinman and publican, convicted of having furnished to the defenders of the country some wine injurious to the health of citizens; Marie Angelique Plaisant, sempstress, at Douai, convicted of having exclaimed, 'A fig for the nation!' and executed the same day."

Let this specimen suffice as a record of the policy of the Jacobin rulers — that gang of assassins which called itself a government, and which undertook in a

special manner to provide for the public safety. Their tender, their careful consideration—their unremitting diligence—their scrupulous vigilance—are sufficiently manifested by the profound obscurity of the names upon which they summoned the guillotine and the lantern to flash the last sharp gleam of light; their promptitude and determination are sufficiently recognized in the swiftness with which sentence and stroke followed upon detection. They would seem to be harmless beings, these poor victims: they occupied no high station — they followed peaceful trades: their existence, one would think, could hardly afford any subject for serious alarm; but it must be remembered that creatures hitherto unimportant acquired considerable power in the revolutionary movement, and that those who struck at miserable milliners and hairdressers and poor artisans, knew by their own experience what such individuals may, by a change of situation, be capable of effecting. It was the fierce brewer, Santerre, who led the battalion which stormed the Tuileries on the twentieth of June. It was Collot d'Herbois, an unsuccessful player from the theater at Lyons, who was the most overbearing of the revolutionary orators; who contrived and carried out the worst of the barbarities against the Royalists of Paris; and who revenged on his native town its adherence to persecuted priests, and perhaps at the same time its criticisms on a bad actor, by scenes of carnage in its streets and in its river, which may be said, in the great contest for supremacy in cruelty, to have won the prize. For here things went so far that those left to live prayed to die. They came to the feet of the murderers imploring to be delivered from the infliction of existence with the urgency which men in extremity are wont to use when they plead for life. They had seen and suffered so much of horror, that they wished to die and forget it. They would not drag about with them the weight of memory. They had seen mothers chained to the stake, and forced to look on while their children were shot down like wild beasts—they had seen pretty little helpless babies slaughtered, and their bleeding bodies danced from pike to pike as a show for their parents—they had seen women dragged out to be murdered even in the hour of their travail—they had seen such sights, and known such partings, and suffered such unspeakable anguish, that death had become very welcome; and therefore it ceased to be cruel merely to kill, and it became necessary to add circumstances of outrage to the last hour. Life was prolonged for subtle additions of agony, and the victims were not permitted to look upon annihilation as a blessing; it was made a curse even to the most pious souls, by the manner of its perpetration. Virtuous women were forced to tremble at a death which was accompanied by foul indignity. They were stripped of their clothes, bound to naked men, and exposed to the brutal gaze of the populace; and the bitter cries of their outraged modesty, which a violent death could not extort, gratified the ears of their destroyers, till they were hurled at last into the oblivion they longed for, and the waters of the Rhone closed kindly over them to hide their disgrace and their despair. Fouché was the partner of Collot d'Herbois in the command of these massacres at Lyons. He stationed himself at a front place in the window of the Hôtel de Ville to survey the fusillades, and erected a telescope there in order perfectly to enjoy the sight. This man escaped the punishment which overtook his comrades; and if their tragic end points at the possibility of a just retribution even in this world, his prosperous career forbids the thought.

Jourdan, who made the first step on the day of the taking of the Bastille toward that distinction which subsequently obtained for him the honorable title of *Coupe Tête*, by tearing out *with his own hands* the hearts of Foulon and Berthier, and elevating them on a pike for the admiration of the less skillful among the crowd, was by his first trade a butcher; and Le Gendre, who at a later date made at the bar of the Assembly some of the most exciting denunciations against the royal family, and afterward against the Girondins, was of the same calling.

Such were the elements that the eloquence of Mirabeau and others of his side—like him, sprung from the aristocracy of France, but resolved to embark in the popular cause—had called into sudden activity. Such were the men whom they had invoked to clamor for what they called reform. They lamented their error too late.

Mirabeau, when the immediate consequences of his own acts appeared in the general and increasing disorder of the State, began to look further forward, and

to see clearly that there was something worse to come. He, the only great genius of the Revolution, struggled to arrest it; he worked passionately with his teeming brain, with his ardent imagination, with the strong impulse of his enthusiastic nature—but he worked in vain. It was too late; and he only lived to learn how much easier it is to rend than to close up, to destroy than to reconstruct. He had one intimate friend who was attached to the royal cause. This was the Count de la Marck, who belonged to the highest nobility in Germany; he was a son of the princely house of Arenberg. He was appointed by Maria Theresa, at the time of Marie Antoinette's marriage, to make one of her escort to Paris; and in private the Empress, assuring him of her particular esteem, requested him to watch over her daughter's fortunes, and to serve her faithfully if he ever saw her in trouble. He obeyed that sacred command—he was a loyal, devoted servant; he wanted neither office nor emolument; and though his friendship with Mirabeau subjected him at one time to supicions from the Court, he never for a single moment swerved from his attachment to the Queen. To him, Mirabeau revealed his secret thoughts; and while he told them, the hot sweat oozed through his pores, his face grew livid, his powerful frame shook with passion; he prophesied like the death-seer, and shuddered at the pictures which his own prescience painted. "The King and Queen," said he, "must take some decided step; if they let things go on as they are going now, it will be horrible. *La populace battra le pavé de leurs cadavres.*" He saw his friend's features, naturally calm, convulsed at these words, rapid changes of color on his face indicating an unwonted hurry of the blood; the emotions he had excited were reflected back upon himself. His passion rose to a towering hight, and with appalling force he reiterated his sentence —"La populace battra le pavé de leurs cadavres." This was in the year 1790.

Mirabeau's efforts for the deliverance of the King and Queen, which so unhappily fell to the ground, were not instigated by the love of money merely. They were the fruits of repentance, not of corruption; he was urged partly by his contempt for the proceedings of the National Assembly, and still more by a strong movement of compassion for those great sorrows of which he had sown the first seeds.

It can not be denied that he accepted from the Court the payment of his debts, which were considerable; but it must be remembered that without their liquidation he would not have been a free man; and I firmly believe that Mirabeau *without his necessities*—following merely the guidance of his feeling—would at this moment have advanced to the rescue of his sovereign. If Mirabeau's disgust at the disorder which prevailed; if his disdain of the feebleness of the Government; if his foresight of the reign of physical force, which was to plunge France back into barbarism, inspired him with the desire to made a great effort for the support of the throne—a deeper sentiment, a more glowing thought, a passionate devotion, gave new energy to that impulse after his first interview with the Queen. This interview took place after a long period of negotiation by letter, conducted in secret, with La Marck's assistance. The King and Queen had in the beginning of their troubles resented the suggestion of any service from Mirabeau. "I hope," the Queen had said, "that we shall never sink so low as to have recourse to M. de Mirabeau!"

Poor Queen! — she had come to it now. She believed him—but that suspicion was unjust—to have been one of the instigators of the revolts of the fifth and sixth of October, when, according to the description of Camille Desmoulins, ten thousand Judiths set forth to cut off the head of Holofernes, when the precincts of the palace at Versailles were invaded by a sanguinary mob, when she and her King were forced back to Paris by a frantic populace with La Fayette at their head, (La Fayette, who let the tumult rage which he might have quelled;) when she saw with a horror she never could forget, the butchery of her faithful guards; but the hour had arrived which obliged her to ask this man for his help. The King's lethargy and continual fluctuations of opinion had interfered with all Mirabeau's designs for his good hitherto; he hoped now to make a stronger impression by personal contact, and by exerting a more direct influence on the Queen, through her to rouse the King. The royal family were at this time at St. Cloud.

Mirabeau had a niece, Madame d'Argenton, living in the neighborhood, and at her house he passed the night previous to this famous interview. It took place in the Queen's apartment, but in presence of

the King; and I mention this because many false rumors, adding circumstances of romance to a truth which needed no addition, have been spread abroad on this subject. The King wished his connection with Mirabeau to be concealed from his ministers. Necker, whom Mirabeau held in contempt, was at that time in office. It is difficult to keep any proceeding a secret where a woman is concerned; and when the scene of action is a palace, it becomes impossible. Accordingly, small facts oozed out through unsuspected apertures, and, as usual, with their forms contorted. The actual details of the case were indeed never rightly understood until the publication of the correspondence between Mirabeau and De la Marck.

It was a strange meeting between such a man and such a woman. He in his person touched the extreme of human ugliness, as she in hers reached the extreme of human beauty. He was the descendant of a noble race, but his manners gave the lie to his birth; and it was no wonder, for his youth had been spent in troubles and disorders, and in long periods of lonely imprisonment. The severity of a tyrannical father had stimulated his evil passions, and their traces were savagely stamped upon his face. The small-pox, too, had come with its malignity to blur and blunt features already sufficiently misshapen by nature; and all this ugliness was on a colossal scale, at once imposing and revolting by its mass. Intellect and size gave a kind of generous grandeur to the aspect of this monstrous man; but the sensual combatted on even terms with the intellectual in his countenance, and his manners, when he strove to please, were grotesque, from an exaggeration of politeness. This was felt especially in the company of ladies, when an excess of homage and compliment was joined with a freedom of tone which betrayed the society he was accustomed to haunt. He had a way, too, of turning green when he was agitated, which was eminently disagreeable. He was perhaps never more deeply moved than on this occasion, when the Queen advanced to meet him, and she at her first movement towards him experienced such a nervous shock as affected her health for some days afterwards. She was made to inspire loyalty and love. It was difficult to resist the majesty of her demeanor and the sweetness of her beauty. Her dignity owed something of its grace to the long imperial line of which she was the fairest scion, but more to the candor and courage of her soul. She rose so much above her humiliations that her adversity became the glorious crown of her majesty; it was not by courtly art or skillful dissimulation that she showed as a great queen, but by her brave sincerity. And now, after the first salutations were over, she addressed Mirabeau at once upon a theme from which most women in her position would have shrunk in fear. She questioned him as to the part he had played in the insurrections of October. Mirabeau was completely subdued: he poured out protestations, impetuous and honest, of his innocence of any share in those fierce attacks upon his sovereigns; but he was eloquent in self-accusation concerning the troubles he had actually been the cause of; eloquent in repentance and in adoration; and he left this conference bewildered with admiration.

The next day one of the popular journals—*L'Orateur du Peuple*—denounced Mirabeau as having been on a secret mission to St. Cloud, and insinuated that he had seen the Queen. The Assembly investigated, but without success, for Mirabeau explained the excursion by his visit to his niece, and silenced accusation by the power of his lungs.

Here, then, was another hope. The King had let go Malesherbes and Turgot, those upright and able ministers who would have delivered his unhappy country from a frenzied revolution by a wise reform; he had tightened his reins when he should have slackened, he had slackened when he should have tightened; he had dropped them in the moment of difficulty when his hand was most needed to direct, and he was now thrown on his back at the heels of the unruly beast he was to guide; but here a strong man had come to give him a helping hand and set him on his seat again, if he would but have the courage to mount and stay there. He could not do it, and the opportunity was lost. Mirabeau made many schemes for him, all of which were contemplated in turn and none adopted.

This intrigue with Mirabeau was indeed one of the King's many great mistakes. As a secret agent working underhand, his operations were dark, dangerous, and inefficient. He should have been appointed the King's minister, and then openly serving him, he might by his commanding eloquence, his power, and his genius, have

borne down opposition. In his present position he was distrusted by the popular side, while he had no honest support from the Crown. It was a hopeless struggle in the midst of which he died, leaving Louis as he had found him, clinging at the edge of a precipice to a few rotten shrubs by way of anchorage, feebly struggling to maintain his slippery hold, with a faint thought, unworthy to be called a hope, that the abyss was not really perhaps so deep as it was said to be. Unfortunate King!—the cause of much harm, but intending none. I can not sympathize with M. Ternaux when he speaks of him as *le plus humain des Rois et le meilleur de hommes;* for I think that the man who, either from cowardice or incapacity, forsakes the post he is appointed to defend, or gives up to the thief the treasure he is bound to guard, or lets drop the standard he is called upon to clutch even in the grasp of death, can not be the best of men. However, his penalty may exceed his fault, he must still be regarded as one who has failed in his duty. Louis XVI. in his fall dragged with him a whole dynasty, and it was no necessary fall; he might have recovered himself by an energetic effort, but his disposition was so apathetic, that in the very hight of his difficulties, when his ministers spoke of the perils which encompassed him, they complained on leaving his presence that he had listened with as much indifference as if they had been gossiping about the remote affairs of the Emperor of China—they found it impossible to convince him of the emergency of his case. There he stood in his accustomed attitude of irresolution, rocking from one leg to the other, and favoring one view this day and another the next. His aspect, like his mind, was unkingly; his manner was blunt; and when he made a concession, he made it so clumsily that it looked like an affront. His speech was abrupt even to the point of rudeness; he was equally unskillful in command and in submission, and wherever he set his foot he stumbled. He was neither a great good man nor an able bad one, and it was his fate to be placed at the helm when the vessel of the State needed the best pilot.

A man strong, wise, just, and resolute, such as the Prince whose loss England is now deploring, should have been there to guide that ship rightly, to know when to go with the tide and when to pull against it—or a cunning, unscrupulous ruler, a Prince such as Macchiavelli has described, might have shifted through the straits, might have hoisted and lowered his sails at the lucky moment, and have got through his own time securely, indifferent to what was to come after. But Louis had neither strength nor craft to meet his position as the heir to a throne stained with vice, as the king of a corrupt, venal, and sensual aristocracy, and of a fierce, hungry people. From the moment when he and his wife, holding aloof for a while from the throng of servile courtiers and fickle subjects, ever ready to fly from the death-bed of an extinct monarch to a new hope, and to press their homage upon a young sovereign—from that moment, when these two, kneeling side by side, with joined hands, dropped tears and prayed; saying: "Oh, mon Dieu, protégez nous, nous sommes trop jeunes pour regner," to the hour of his capture by the people he had loved, his desire had been to clear his throne from stain, his court from corruption, and to relieve all the sorrows of his subjects. With the help of a strong minister he might have done the work gradually and cautiously, with a temperate discretion, not giving way to the clamor of one or of another, but doing what it was right to do, and changing not with impulsive rapidity, but with sober determination, where change was necessary. Louis, however, had not vigor to support a worthy Minister; he dismissed Turgot, although he sympathized with him, in compliance with the remonstrances of that blind, narrow-thoughted aristocratic party to whom any measure of reform seemed a crime; after him came Maurepas, Necker, Calonne, Brienne, and Necker again; then the summons of the States-General; then a feeble opposition to the demand of a double vote for the Tiers-Etat. The King opposed, hesitated, gave way, and thus opened the breach to the besiegers, who well knew how to enter it. Either consistent concession or resolute repression might have have served, but feeble opposition could only irritate, and so it was that this great tempest gathered, that the States-General became the National Assembly, and that an incapable ministry dropped the reins and let the Assembly seize them, that all the social relations of the country were changed by a rapid series of destructive decrees, that

the Assembly itself was dominated by the populace, and that the King was left with nothing but his veto and the scorn of the nation. Sanctified though his memory may be by his piety and his great afflictions, and by his love for his Queen and children, it is impossible to esteem such a King; but not withholding the pity that he deserves, I turn with a deeper regret, and with a fuller sorrow, to contemplate the fate of that radiant, generous Queen, who shared with him the highest and the lowest furtune — the throne, the prison, and the scaffold.

Marie Antoinette was only fifteen years old when she left the home of her imperial mother at Vienna, to become the bride of the Dauphin of France. She had an affectionate heart, and it was pained by the separation from her brothers and sisters; she shed many tears then, not knowing that at a later day those natural tears would be charged against her as treasonable crimes. When she took leave of her own servants, who were to be exchanged for those of another country, she had a thousand messages of love, but they were interrupted by her sobs, for every member of her house. This was only a soft sorrow, (unlike those she was afterward to know,) such as rains itself away, and with no dark prestige of the future, but with a hopeful heart, she soon smiled again, and when she made her triumphal entry into Strasburg, saluting with winning courtesy the expectant crowd that thronged to see her, she appeared to them as an image of beauty without a rival. Troops of children, in fancy costumes as shepherds and shepherdesses, strewed flowers in her path; and she, not guessing how it was one day to be sown with thorns, brightly glanced her thanks. If a malignant spirit, a voice from hell, had then muttered in her ear what was afterward to come, what kind of crowd was at a later day to wait upon her, thirsty for her blood, her honest heart would have repelled the fiend, and told him that he lied. Goethe, who was at that time a student at Strasburg, interested himself in all the preparations for the triumph of the royal bride. He was painfully struck by the subject which the tapastry hangings of the reception-saloon represented. It was the history of Jason and Medea. Creusa in her death-struggles, Medea in her fierce anguish; and he protested against the offense to taste and feeling which brought an image of terror and of death to confront a sensitive woman on such an occasion, and which might shape itself to her imagination as a horrible foreboding. But the foreboding was for the poet. The Princess was happy. It was well — it was right that the future should be thickly vailed, and that her thought should bound joyfully and gratefully in answer to the loyal acclamations which greeted her wherever she moved. When she reached Paris, enthusiasm was at its hight, and the old King was so fascinated by his young daughter-in-law, that Madame du Barry felt jealous, and feared a new influence. The Dauphin's brothers were charmed, especially the Count d'Artois, who, handsome and accomplished, and distinguished by a certain epigrammatic talent in conversation, knew how to please a woman, and won from Marie Antoinette a warm sisterly affection. The Duke of Orleans too, for a time, left the bad company which his vicious nature led him to frequent for the enjoyment of her society. The grace of her pleasantry, the gentleness, joined to the dignity of her bearing, the sweetness and vivacity of her speech, the tenderness of her frank smile, lent something of enchantment to her presence, and the true goodness of her heart was felt in every accent and every look. But even now there was a dark spot behind the sunshine, a sadness in the splendor which surrounded this young Princess. From the crowd of worshipers one man stood apart, while so many hearts opened at her smile, one was shut up. That one, whose affection was most important to her, upon whose tenderness her whole destiny was hung, turned from her with indifference, and the most captivating woman in Europe was a neglected bride. It was a dangerous position for such a woman—young, enthusiastic, and proud; and if she had broken out into open resentment, and replied to coldness with disdain, I think that fault might have been forgiven her. The Prince who received her so ungraciously was in most qualities inferior to herself; a dull, clumsy youth, without any attractions either of person or of speech; and yet he could pain her by his neglect. It was her first trial, and she bore it with the same courage which supported her in the after-days of affliction; she defeated her sorrow by her resistance, and disappointed her humiliation by the smile with which she met it. It

was true that on many occasions her favorite ladies found her at the end of a day's pleasure pouring out secret tears in the silence of her bed-chamber, but she never uttered any complaint or reproach, and so it presently happened that the Dauphin, who had been insensible to her beauty, began to appreciate the charms of her disposition, and found himself attracted toward her by the playfulness of her humor, which is described by De la Marck, in a pretty untranslatable phrase, as the *douce malice de son esprit*. He positively fell in love with her against his will, and whatever the infirmities of Louis, his love was worth the winning, for it remained steadfast through good and through evil report, it stood firm against the shock of calumny, it was a strong shield in the sharp hour of opprobrium.

In the total eclipse of fortune, when all other delights and hopes went down, this light of love remained, a healing, purifying influence which led a crushed heart to God.

Surely, now, when Marie Antoinette was mistress of the throne of France and of her King's attachment, happiness had opened all its sources, and she had little to do but to draw her enjoyment from them. Pleasure was her business. To give great entertainments, to be charming, to dance, to go to the play, to invent new diversions, to direct new fashions, to supply to the throne in her own person the dignity and grace which the King's wanted; these were the most serious avocations of her life until she became a mother. It belonged neither to her position nor to her taste to interfere with politics at that time; her inclinations were not toward study or reflection, and her understanding was rather quick than profound; her judgment was penetrating, but she took little pains to improve it by education, and she was seldom engaged long in any one pursuit. She found her enjoyment in society, and her happiness in friendship. Her warm heart was impelled to seek friends, and, when they were found, to lavish favor and indulgence upon them. Two of them, the Princesse de Lamballe, and the King's sister, the Princess Elizabeth, were worthy of all her affection; but her choice was not always so wise, and her strong preferences, too little masked, gave rise to some of her troubles. She took a wonderful delight in the society of Madame Jules de Polignac, she was constantly in her drawing-rooms; there she threw aside form to enjoy friendship, but she excited malignity and envy; and in contemplating the course of the Revolutionary history, it must never be forgotten that personal feeling was at the bottom of its most seditious movements. Patriotism directs a discreet reform; rancor, hatred, revenge, vanity, and envy stimulate a revolt.

Marie Antoinette, a foreigner in Paris, very young, and of a frank, joyous, and incautious temper, needed a careful counselor, and had none. Her husband was quite unable to direct her, and she had to steer her way as best she might through the perplexities of a Court loose in morals and rigid in etiquette, with no other help than that afforded by her sincerity of purpose and her eager desire to give pleasure and to do good. It was unlucky that Madame de Polignac was not capable of supplying any assistance to her inexperience. The object of a regard which offended those on whom it was not equally bestowed, she did not appreciate its worth; unlike the Princesse de Lamballe, she valued less the tenderness of the woman than the favor of the Queen; she took advantage of an enthusiastic generosity; she besieged Marie Antoinette with solicitations of office and place for friends and favorites of her own, regardless of the effect that these appointments might have upon the Queen's reputation; and, besides this, the society she invited her sovereign to meet was very ill-chosen.

On one occasion, Marie Antoinette remonstrated concerning the character of one of the guests. Madame de Polignac replied that she could not banish her friends even for the sake of her Majesty, and on this the Queen forsook the Polignac assemblies, though she still remained on friendly terms with the Countess. She now frequently repaired to the *salons* of Madame d'Ossun, one of her ladies in waiting, whose entertainments were directed with more discretion; but from this circumstance arose irritation and discontent in the Polignac côterie, and among the unworthy aristocracy of which it was composed, whose gratitude and loyalty should have been proof against all assault, this little sting of mortification generated poisonous scandal; and licentious epigrams and lampoons, circulated first in this select company, gradually found their way into lower circles, and at last, in the time of general agitation, into the

streets. A vile populace then insulted the Queen with a distich invented by one of her own nobility in his jealous spite. Some of the most offensive missiles which were flung at her by blood-stained hands were furnished from the apartments of her favorite friend, and though I would not defend or extenuate the ferocity of the people, I affirm that theirs was the lesser guilt; for those who made the lie knew that it was a lie; those who first set the slander going knew the virtues of the woman whose character they were traducing; and they wrote their epigrams one day, and knelt at the Queen's feet on the next, with courtly grace, and with the fawning which looks to thrift. One of the most infamous of these aristocratic libels was written on the subject of a reel which the Queen danced with the Marquis of Huntley; but it is enough to say that such things were. They have perished, as all lies must perish eventually, and I am not willing to revive their corrupt odor.

The French nobility were not true to themselves; their misfortunes are to be traced to their conduct; their frivolities and their profligacy were just subjects of animadversion, and they betrayed all their feebleness and selfishness as soon as the throne which they should have struggled to support was threatened. They thought of their own danger rather than of their King's, and they slipped away to other shores, by their emigration doing infinite damage to their country. They should have rallied round their sovereigns in that close and barbarous siege; they should have thrown themselves as a shield between their monarch and his assailants; they should have made a rallying-point for the cause of order; they should have used their eloquence to rouse the good hearts left in France to a sense of justice; but they preferred running away to breathe fury from distant shores in association with foreigners, thus irritating national pride, and stirring, not dominating, the passions of their infatuated countrymen. And I may mention here the fact that the Polignacs were among the first of the emigrants.

Marie Antoinette was worthy of much better associations. Placed as she was, her virtues became her misfortunes, for the generosity of her disposition freed her from suspicion, and the ready kindness of her heart was frequently abused. She has been blamed for the careless avowal of her sentiments, because she disliked the etiquettes of the French Court, and gave way to her distate, and because she gave offense to many rigid old ladies by setting aside tedious accustomed ceremonies, and allowed her lively perception of the ridiculous to appear upon occasions when prudence should have vailed it. The vices of a court are so far like the vices of a watering-place, that in both dangerous gossip and malevolence grow out of the idleness striving to be busy which belongs to a small assemblage of people perpetually meeting without any especial pursuit; but the consequences of the intrigues of a palace are graver, as they deal with more eminent characters, and trouble more important interests.

In an unguarded moment, Marie Antoinette gave offense (and the offense was never forgotten) to a man whose personal aversion, as much as any other cause, affected her subsequent destiny. This man was the General La Fayette. He was conceited, ambitious, pedantic, and, above all, personally vain; nature had not given him the endowments that he coveted; he was generally awkward, a bad rider, a bad dancer; tall, thin, and red-headed; and he struggled unsuccessfully to be like his brother-in-law, the Duc de Noailles, who had most of the graces and faults of fashionable society. Once, at a convivial supper, La Fayette, who was not fond of drinking, but who was anxious to do all that Noailles did, strove so hard, and to so much purpose, to rival him in his potations, that he was finally carried home in a state of intoxication.

It was through the influence of this same Noailles that he obtained permission to dance in one of the Queen's quadrilles, where it was her delight to assemble all that was most choice in the youth, beauty, and nobility of Paris; but his appearance there was not a happy one.

Where were these courtiers when, on the day after the flight, intercepted at Varennes, the Queen stood in her palace by the side of La Fayette, and saw in him her jailer? Did he retain the sting of that light laugh in his heart when he doubled the guard at the Tuileries, and established spies in every apartment, not conceding any mercy even to the modesty of the Queen his prisoner, but stationing one of his sentinels so as to command a view of her bed? His position was then one

of triumph, but he lived to regret it, and even on that day the dignity of the Queen's personal bearing deprived him of a portion of his enjoyment. The proud submission of her manner disturbed him when she offered him the keys of her private bureau and wardrobe, and he declined to accept them; she persisted, and placed them on the brim of his hat; he put them back in their place with the studied civility which he always assumed toward her. By her proceeding she sought to extort from him the confession that he was her jailer, and he knew well that he was so, but he did not choose openly to avow it.

If Marie Antoinette's vivacity of disposition led her sometimes to imprudence, her quick thought and her promptitude of action at others saved her dignity in difficult situations. A pretty anecdote in illustration of this, is to be found in Madame d'Oberkirch's Memoirs.

"M. de Lauzun" (says Madame d'Oberkirch) "was deeply enamored of the Queen; her Majesty could not endure him. He had the effrontery to assume the Queen's livery and follow her all day as a lackey, and even spent the night crouched at the door of her apartment. The Queen did not even recognize him; he was in despair, when, fortunately, an opportunity offered of making himself more conspicuous. Her Majesty was to drive from Trianon, and at the moment she approached her carriage, he bent his knee to the ground, that she might tread upon it instead of taking the usual step. Her Majesty, surprised, now looked at him for the first time, but like a woman of tact and good sense, as she was, she feigned not to know him, and calling a page, she said: 'Let that man be dismissed; he is very awkward, he does not even know how to open a carriage door.'"

This was an impertinence well and properly disposed of, and yet it may be easily understood how such a story circulating through the bad Parisian atmosphere, might collect offensive matter as it passed, which would wholly change its constitution.

The fact of the Duke's actual attendance on the Queen, and of the night passed by him at her chamber-door, would be the incidents to excite wonder and to engross comment, while those of her failing to recognize him in the first instance, and of her dismissal of him at the very instant of recognition, might be altogether dropped. It was the fashion among the French aristocracy at that time to be deliriously in love with the Queen, as it was the fashion at a later date among another class to look upon her with frantic hatred; the one was a consequence of the other; and while devotion, admiration, and hopeless passion exhausted themselves in sighs and couplets, breathed as incense about her throne, envy, the black shadow cast by love, was darkening all the way before her.

"For slander's mark was ever yet the fair;
The ornament of beauty is suspect,
A crow that flies in heaven's sweetest air."

And detraction was busy with her great name. She did not know it. She appreciated the homage as women do; and her heart was too much occupied with happy affections to admit distrust.

Her most passionate enthusiasm was for the Princesse de Lamballe. When adversity came, it drew these friends closer together, and when too many were found to fly for their personal safety, the Princess clung close. She left the home of her father-in-law at Vernon for almost certain death in Paris, on the news of her Queen's danger, and when her murderers forced a wretched barber, sickening at the task, to dress and decorate the soiled hair of that beautiful bleeding head, in order that their ironical cruelty might parade it on the point of a pike before the Queen's prison windows, still bearing in its mutilation the semblance of the festive scenes where the two used to be happy when they met, there was found hidden among its tresses a letter from the Queen to her friend, very earnestly and pathetically imploring her to run no risk, but to stay away in a happier place.

The Princess died a horrible death by disobeying this injunction, but it was better so to die, in such a cause, than to live any length of life. The urgency with which Marie Antoinette, throughout all her calamities, sought to shield her friends from her own perils, was one of the most noble of the many noble points of her character, and in justice to M. de Polignac, whose conduct contrasts so unfavorably with that of Madame de Lamballe, it should be told that the Queen approved of her desertion.

Among the many who watched the Queen in her glory with sour distaste, there was one whose intellect should have opened her heart to better influences: Manon Phlipon was the same age as Marie

Antoinette, she was the daughter of an obscure engraver in Paris. She grew up with great endowments of understanding, and she was the prodigy of her family. She was not slow to perceive in herself the merits which surprised others. She was fond of considering and investigating her own attributes. She had a very large share of self-love, so that not only those qualities which really distinguished her, but such as were common to all human beings, and even the most insignificant and basest actions of life, appeared to her exalted by association with her own person, so as to become worthy of minute examination and careful record.

She discerned her genius as something superior to the sphere in which she moved, and she could not see why, with her uncommon capacity, her ready gift of speech, and her personal attractions, her position should not be something greater than it was. A connection of her family who had a friend holding some employment about the Court, took the father and mother and little girl for a few days on a visit to Versailles, by way of giving them, and especially the child, a great treat. Here, from the attics of the palace, they were introduced to some of its splendors, and they saw the stately gardens and the beautiful women who walked among beautiful statues, passing pleasant hours without misgiving. Manon's parents were content to admire and praise, but Manon's own heart, young as it was, rankled with corroding gall, and she said to her mother as they walked down one of the majestic avenues, long and broad:

"Take me away; oh! do take me away. I love the statues, but I *hate* the living people."

The only reason for hatred was a sense of inferiority; and a small feebly-twinkling distant planet might hate the sun, and yearn to eclipse his light, as this young citizen hated the Queen. The hands of both King and Queen were open to gentle charity, were loaded with immunities. At her first coming the Queen, on her own impulse, had sacrificed a considerable portion of her private funds for the relief of those who had suffered by the accidental destruction of their houses on the day of her marriage ceremony; and from that day to the day of her death, whenever distress came within her notice, she was eager to relieve it. Her beauty owed more than half of its charm to the kind heart which made her smile so captivating; but she sat on a throne — she moved in state — she had subjects and worshipers—she went in a magnificent carriage in long regal procession to thank God for the birth of her child; and that finely-shaped head, acknowledging by its gracious movement (this singular grace betrayed her afterward at Varennes) the acclamations of an admiring, fickle crowd, was circled by a crown. Manon Phlipon looked on, and wondered, and detested. Why should there be such a woman as Marie Antoinette to affront her own low station? or why should she not be such a woman? She read Plutarch, dreamt of republics, and imagined a scheme of equality in which the daughter of the engraver should be a greater being than the daughter of the Empress—for this is the secret thought of every soul aspiring after equality. When all is equal, then *I* shall be superior. The age in which Manon lived was big with prodigies. There was no event too monstrous or too miraculous then to be brought forth—there was no vision too strange for fulfillment; and the passionate dream of her heart became a truth. She was married to a man whose position enabled him to assist in carrying out her views; and they were carried out to the farthest limit of her hope. As Madame Roland, the wife of the pedantic, small-minded Girondin, whom the force of circumstances and the feebleness of the men of that time promoted to the King's Cabinet, she tasted all the triumph of a usurped royalty. In her own ascendency, she felt the full delight of treading down the legitimate monarchs. She relished the heaped-up agonies of their complete abasement, while she applauded in herself the Majesty of Equality. At her house was planned the famous attack on the Tuileries of the twentieth of June, 1792, (under the disguise of a petitioning deputation,) for the intimidation of the King, when a fierce armed multitude invaded the palace with threat and insult—when the King stood at bay during five hours of calm endurance against the pikes and sabers of forty thousand ruffians—when his intrepid consort in another apartment faced a similar host, pale but erect, protecting her children; her fair delicate son, then seven years old, Dauphin of France, sat upon the table, which was the only barrier between his mother and the savage populace. They forced upon his head the

red cap, the sign of carnage, which his father, too, had been compelled to wear. It was too hot and heavy for the child's head, and the Queen watched in silent anguish the drops of sweat which gathered on his brow, and sought to remove them with her soft hand. Santerre—the same Santerre who had headed the revolt of the sixth of October—saw the mother's pain, and was struck with a movement of compassion. He ordered the cap to be taken off the young boy's head, and for this action he received a grateful glance from the Queen. He approached her, and muttered some words that sounded like an apology, and used his utmost efforts to relieve her from the presence of that monstrous army of the faubourgs, of which he was the virtual commander. But the evening was far advanced before their dispersion was effected, and when the King and Queen were reünited after these long hours of suffering, Marie Antoinette fell down exhausted at her husband's feet. Before the turbulent mob, armed with murderous weapons, and blasphemous speech, and roaring for her life as wild beasts roar for their food, she had borne herself as a great majesty, and had met insult with the dignity of fortitude; but now nature would have its way—now, when she tightly clasped her husband's knees, as if in dread of such another parting, her long pent-up anguish told its true history in bitter cries. The King lifted her up, and held her against his heart. Poor man! He wept: "Ah, madame!" he said, "pourquoi faut il que je vous aie arrachée à vôtre patrie pour vous exposer à l'ignominie d'un pariel jour?" M. Merlin, a deputy of the Assembly, (and not a humane one,) who was present, shed tears at this sight. "Vous pleurez, monsieur!" said the Queen. "Oui, madame," he replied, "je pleure sur les malheurs de la femme, de l'épouse, de la mère. Mais mon attendrissement ne va pas plus loin; je haïs les Rois et les Reines."

On the whole, this insurrection did not answer the expectations of the Girondins. The King had shown a courage which had never before been attributed to him, and whispers went abroad of the pale beauty of the Queen; for in that fierce rabble some hearts knew the throbbings of a mother's love, and their instincts taught them sympathy. There was a reaction among the multitude in favor of their sovereigns which alarmed those who had set on the attack; but Madame Roland's resolute mind understood triumph better than fear, and she said, as she sucked up greedily all the details of Marie Antoinette's protracted torture: "*Que j'aurais voulu voir sa longue humiliation et combien son orgueil a du souffrir.*"

I do not know any thing much more cruel than this enjoyment of Madame Roland's. It is only the heavy penalty she paid for it that has saved her from universal condemnation. But posterity, whatever her misfortunes, can not absolve her from the guilt of an unrelenting, unjust, and pitiless heart. It is a grief to find such a heart hidden under an external feminine grace; and Madame Roland's inhumanity stands out as a blot upon her sex. There was another famous furious woman in Paris at that time, of a lower grade, and impelled by different motives, but whose actions led to the same end. This was the handsome, half-mad, half-eloquent, Mdlle. de Theroigne. Her life was licentious, and her nature was fierce. The misfortune of her youth had depraved her character. In her early girlhood, a young nobleman had seduced her, and left her without comfort or hope to the harsh resentment of her family, an object of contempt, withered and soiled in the opening blossom of her days. So wronged and so wretched, she plunged into total degradation, and she became professionally vicious. Her heart grew hard in her evil courses, and the fever of revenge stirred in her blood. The tumult of the Revolution, the reversal of the whole structure of society, the general work of ruin, offered a distraction to her thoughts, while the promise of revenge upon the whole race of aristocrats gave a new motive to her life. It was well to degrade a virtue such as she had lost, and to offend a modesty such as she had forfeited. It was a solace to hear the Queen insulted, and to say of her: "She is only such another as I am." To imagine such an equality in vice was a consolation, and to make an equality in suffering was a hope. She was a fit instrument for the bad service of a bad cause; and she was prominent in the later days of the Revolution in every scene of horror—her feet forever in a pool of blood. She held the knife of torture at the September massacres. She was busy at the Abbaye in tearing piecemeal with red-hot pincers the living flesh of a young and beautiful girl, nailed to a stake to undergo

the penalty of having an aristocratic lover. She was deaf to pity; her heart acknowledged only one delight, that of murder. She was the idol of the mob, whom she knew how to harangue with her loud delirious eloquence; and she was the leader of bands of women not less ferocious than herself, who stormed Versailles and the Tuileries, and hurled at a noble Queen the vile epithets of their own vile trade. She was a fit agent for such a man as Marat; but not only Marat welcomed her service; and from the days of the fifth and sixth of October she was a powerful officer in the march of revolt. It was not till after the fall of the Girondins that she fell; not till Paris had grown giddy with the sight of blood, and knew no longer whose to demand—not till each party had fallen victim to the other—not till she had met again the man who first betrayed her, and he had basely begged of her a shelter from pursuit, and she had savagely denied it, and he had perished among the victims of September—not till she was steeped soul and body in the blood of the innocent—not till she had led troops of young children to dance in triumph round the agonies of the slowly dying—not till she had presided at the infliction of the last outrages on pious nuns and gentle novices—did her own dark day of retribution come, when a troop of furies, whose malignity hers had so often quickened to its work, dragged her from her carriage, objecting—with some show of justice, I think—to that sign of inequality and luxury, stripped her of all her clothes, and flogged her in her nakedness on the great public walk of the Tuileries Gardens. After this treatment, which, horrible as it was, fell short of the barbarities so often inflicted by her hand, her frenzy became insanity, and she passed the rest of her life within the walls of a mad-house.

On the whole, no doubt, women are more impulsive, less reasonable, easier to excite, more frequently swayed by personal partialities, narrow jealousies, and irritated self-love, than men; for this reason, whether the fact be due to the weakness of their nature or the inferiority of their education, they are less fitted to take part in public life. Their partial views fit them ill for a just regard to the general welfare; and the great influence they have exercised over the politics of France has been a misfortune to that country. If in the ferment of the State their voice be ever heard, it should be in the soft appeal for mercy, never in the cry for vengeance. For nature is forced, her whole system is subverted, when the gentle pity of a woman is cast off, and then feebleness becomes unrestrained fury. But in the general intoxication of the French Revolution, not women alone were acted upon in the most important matters by petty rancor, mean personal affronts, and a base vanity; few of the men of the Girondin party had much better motives; and the most conspicuous among the revolutionists, by his name and title, was, in the beginning of the movement, alienated from the Court by resentments of a very puerile description. This was the Duke of Orleans, who, at the Queen's first introduction to the French Court, rivaled the Count d'Artois, as I have already said, in the devotion he paid to her. An offense, quite unintentional on her part, turned his regard to anger. In the year 1775, the young Archduke Maximilian of Austria, then fourteen years of age, Marie Antoinette's brother, arrived at Paris, traveling *incognito*, under the title of Count of Burgau. Marie Antoinette, who had seen none of her own family since her departure from Vienna, welcomed him with a transport of joy. She could hardly bear his absence for a moment, as if fearing to lose him quite; and the first days succeeding his arrival were passed by him at Versailles almost exclusively in his sister's company.

These hours of domestic pure delight were stolen from the throne and its ceremonials. They seemed innocent, but they gave umbrage. The Queen, young and inexperienced, was not aware of the etiquette of the French Court, which required that the Archduke should pay the first visit to the French Princes of the blood. The Princes, finding that he did not pay them this expected compliment, translated his ignorance into a voluntary act of contempt, and imputed it to the inordinate pretensions of the House of Austria. The Archduke, they said, was bent on receiving the first visit, but his pride should not be gratified; and they held themselves aloof, as if unconscious of his existence. It was now the Queen's turn to feel aggrieved. She had thought that these Princes would be eager to show respect and kindness to her brother. She had imagined them presiding over entertainments in his honor, and rivaling each other in efforts to please him. She ex-

pressed to the Count de la Marck her astonishment at their coldness.

Unluckily the Count, also an Austrian by birth, was not better instructed in Court etiquette than the Queen herself. He saw her distressed, and his sympathy went with her. The day after this interview he requested another, in order to communicate to her an idea which suggested itself to him. He proposed to invite the most distinguished of the young French nobility to give a banquet to the Archduke, at which the Count d'Artois should preside. The Queen was gratified, and the thing was done. It was a blunder. This entertainment added to the offense of those already too much offended; and the Duke of Orleans, who of all the Princes had felt most stung by the supposed slight, was now provoked to serious resentment. On the other hand, the Queen, never good at dissembling, betrayed her displeasure with him at her subsequent receptions; and, as it generally happens in misunderstandings of this kind, her altered manner reacted upon him; and, says De la Marck, "On le vit constamment depuis cette époque saisir avec empressement toutes les occasions de blâmer les démarches de la Reine."

The Queen was too indifferent to the damage that the anger of such a man might do her; and the King, naturally discourteous, was especially cold to this cousin of his; for he was offended by his affectations of Anglicism, and by the immorality of his life. A little flattery and promotion would have secured his adherence; but instead of that, the Duke's self-love was wounded on every possible occasion by the Court, till the irritation of his feeble character became an itching irresistible impulse to revenge. He was not a strong man in any way: his capacity was narrow, his conversation was trivial, his thoughts were low; but unhappily it is easier to work evil than good; and a powerful instrument for harm may be constructed out of a seemingly insignificant tool. The Duke might well appear an inefficient support; but the throne was in that staggering condition when the removal of any the smallest prop was dangerous, and when one more blow struck at it might be fatal.

When the Duke in his first offense gave way to his sullen humor by encouraging lampoons, and propagating shameless slanders against the Queen, whom he had once held dear, he would no doubt have shuddered at the intimation of those sufferings with which he afterward assisted to load her weary life. It would have been impossible to him then to think that he would one day look out from his palace window to applaud the ghastly procession, of which Lamballe's murder was the triumph, as it moved on from its wicked work in front of the Queen's prison; or then to believe that he would one day mount the steps of the Revolutionary tribunal to vote for the execution—the summary execution (pronouncing even against the requested respite of three days) of the King, his cousin. But he came to this: throwing himself into the arms of the Republican party, they bent him to their own uses. They disliked and despised him, but they saw good policy in retaining him on their side, and they kept him till his service was ended, and then cut off his head. And so his base life came to a base conclusion. But his progress in crime was not without interruption. There was a moment of halt after the capture of the royal family at Varennes, when his heart was open to their affliction; and on his return from his mysterious mission in England, it was with the intention of reconciling himself to the King that he repaired to the Tuileries. Here the King was ready to receive him with cordiality, for his nature was forgiving, but, with his usual indolence, he omitted to give any instructions to his officers and attendants; and they, exasperated by the wrongs of their master, and regarding Orleans as one of his worst enemies, rashly insulted him. They greeted him with loud contempt, hissing, and even spitting at him. His ill blood was stirred; the old sore bled again. He did not pause for question—he did not penetrate to the King's presence—but turned his back upon the palace forever, to enter the Jacobin Club, and thenceforth to join in every excess of the Jacobin party.

Some very interesting details relating to the position of the Duke of Orleans at this period are given in the memoir, published in the year 1859, of Mrs. Dalrymple Elliot. She was one of the most beautiful women in Paris at this time, (her beauty has been immortalized by Gainsborough,) and she was an Englishwoman; but her life was not so fair as her face; evil influences at an early age led her into the ways of corruption; and she was one of the many mistresses of this Duke of Or-

leans. She had, however, redeeming virtues. She had great compassion and courage, and during the Reign of Terror her life was frequently risked voluntarily in the effort to deliver wretched victims from death. Her narrative is valuable, simple, unaffected, genuine, and hardly so well known as it deserves to be. The extract which follows here gives a curious painful picture of the Duke's position at the close of the great tragedy:

"17*th January*, '93. — I had seen little of the Duke of Orleans for some time. On my asking him what he now thought of the wicked trial which was going on, and saying that I hoped he did not go near such vile miscreants, he replied that he was obliged to go, as he was a deputy. I could not help saying: 'I hope, Monseigneur, that you will vote for the King's deliverance.' 'Certainly,' he answered, 'and for my own death.' I said: 'Monseigneur, you will not go to the convention on Saturday; pray don't.' He said, 'that he certainly would not go, that he never had intended to go,' and he gave me his sacred word of honor, that though he thought the King had been guilty by forfeiting his word to the nation, yet nothing should induce him, being his relation, to vote against him. . . . . On the Saturday, at about ten o'clock, the sad and fatal list arrived with the King's condemnation, and with the Duke of Orleans' dishonor. I never felt such horror for any one in my life as I did at that moment at the Duke's conduct. We were all in deep affliction, even poor Biron, who was a Republican, was almost in a fit. A young man who was the Duke's aide-de-camp tore off his coat and flung it in the fire, saying that he should blush ever to wear it again. . . . . Every place seemed dreary and bloody to me. I could not sleep. The image of the innocent King was constantly before me. Till that moment, I had always flattered myself that the Duke of Orleans was misled. Now, all illusion was over. I even threw the things he had given me, which I had in my pockets and in my room, out of it, not daring to stay near any thing that had been his."

Six weeks after this event, Mrs. Elliot was seriously ill; agitation of mind was the cause of her illness. The Duke of Orleans sent her a letter, entreating her to see him when she was well, saying that all the world had given him up, and that his unhappy situation might make her forgive him, if she thought he had done wrong. She consented to see him.

"He was dressed in deep mourning, looked embarrassed, and very grave. I was nearly fainting, and he made me sit down, and himself gave me a glass of water. 'You look ill,' he said; 'but I hope you are quite recovered from your cold.' I told him that his black coat made me remember terrible events, and that I supposed he was, as I was, in mourning for the King. On this he forced a smile, and said: 'Oh! no; I am in mourning for the Duc de Penthièvre, my father-in-law.' 'I suppose,' I said, 'that the King's death has hastened this, or perhaps the manner of his cruel trial, and your having voted for his death.' Here I burst into tears, and said: 'I dare say that he died broken-hearted, and so shall I; but you, Monsiegneur, will die, like the poor King, on the scaffold.' 'Good God!' said he, 'what a situation you are in! I am sure I should not have made you come here, had I had an idea of all this. The King has been tried, and he is no more. I could not prevent his death.'

"I then replied: 'But you promised that you would not vote.' On this he got up, observing: 'This is an unpleasant subject. You can not, must not, judge for me. I know my own situation; I could not avoid doing what I have done. I am perhaps more to be pitied than you can form an idea of. I am more a slave of faction than anybody in France, but from this instant let us drop the subject. Things are at their worst.'"

This picture, drawn by the hand of a simple woman, seems to me worthy of the greatest masters of art; and in the pages of Scott, or even of Shakspeare, it would be difficult to find a better delineation of the vailed remorse and secret struggles of a cowardly nature wading in guilt, than in this quiet narration of a dialogue which actually took place. Louis Philippe, Duc de Chartres, sometimes called Young Egalité, (but he never deserved so bad a name,) had just left France with General Dumouriez, when Mrs. Dalrymple held her last interview with Philippe Egalité. He was then no longer even nominally a free agent, and arrived at her house under the superintendence of two gendarmes. He took from his pocket a letter written by the young Duke on the eve of his departure, expressing just indignation against his father for the course he had taken at the King's trial. This letter the vindictive Egalité never could forgive, and he burnt it in Mrs. Elliot's presence, saying that he owed to his son's emigration with Dumouriez the unwelcome company he was in. Not long after this he was led to the scaffold, as Mrs. Elliot had predicted, an object of universal scorn. His vengeance had brought him no peace, his sacrifice for popularity had brought him no profit; his vote for the King's death had been heard with horror. And when he had made his great renunciation, and forfeited

for his here his hereafter, and staked his conscience for his paltry life, he had perceived, by the muttered groans and averted looks of his audience, that he had not obtained the favor he sought for. Even the most ruthless of his associates recoiled from this treason of the blood, and at his last hour he saw himself unhonored, unpitied, unlamented; rejected by every faction in France, and execrated by all mankind.

From Fraser's Magazine.

G O I N G O N.

There are many things of which you have a much more vivid perception at some times than at others. The thing is before you; but sometimes you can grasp it firmly, sometimes it eludes you mistily. You are walking along a country path, just within hearing of distant bells. You hear them faintly; but all of a sudden, by some caprice of the wind, the sound is borne to you with startling clearness. There is something analogous to that in our perceptions and feelings of many great facts and truths. Commonly, we perceive them and feel them faintly; but sometimes they are borne in upon us, we can not say how. Sometimes we get vivid glimpses of things which we had often talked of, but which we had never truly discerned and realized before. And for many days it has been so with me. I have seemed to feel the lapse of time with startling clearness. I have no doubt, my reader, that you have sometimes done the like. You have seemed to actually perceive the great current with which we are all gliding steadily away and away.

Rapid movement is a thing which has a certain power to disguise itself from the person who is involved in it. Every one knows that if you are traveling in an express train at sixty miles an hour, you do not feel the speed nearly so much as the man does who stands beside the track and sees the great mass sweep by like a hurricane. Have you ever thought it would be curious if we could for a few minutes be made sensible of the world's motion? Here we are, tearing on through space at an inconceivable speed. We do not feel it, of course; we could not stand it. I should like to feel it for half a minute—not for more.

But it is not *that* motion we are to think of at present. No special illumination has been accorded to me, making me feel that fact which we all know without feeling. But there is another rapid motion, common to all of us as is the motion of the earth which bears us all. There is a great current bearing us along and all things about us, which is commonly not much felt. But it seems to me that for several week I have been actually feeling it. I have been excessively busy; living in a great pressure and hurry of occupations. In that state, my reader, you feel Sunday after Sunday return with a rapidity which takes away your breath; and let me say that if you have to provide one sermon, and still more if you have to provide two, against the return of each, you will in that fever of work and haste come to look from one Sunday to the next till you will come to find them flying past you like the quarter-mile posts on a railway. You will find that you can hardly believe, walking into church on Sunday morning, that a week has gone since the last Sunday. And in such a time you will realize much more distinctly than you usually do, that all things are going on — drifting away—all in company. These April days are taking life away from you, from me—from prince and peasant. There is one thing at least which all human beings are using up at exactly the same rate. We can all get out of the day just twenty-four hours, neither more nor less. One man

may live at the rate of a hundred pounds a year, and another at the rate of a hundred thousand; but each expends his time at the rate of three hundred and sixty-five days a year. Whatever other differences there may be between the lots of human beings, we are all drifting on with the current of time, and drifting at the same rate exactly. And we are certainly drifting. We are never quite the same in two successive weeks. One Sunday is not like the last. Look closely, and you will see that there is a difference—slight perhaps, but real. Each time you sit down to your *Saturday Review*, you feel there is a difference since the last time. Still more do you feel it as you read the returning *Fraser*, coming at the longer interval of a month. Things never come back again quite the same. And indeed in Nature there is a singular dislike to uniformity. If to-day be a fine day, look back; it is almost certain that this day last year was rainy. If to-day you are in very cheerful spirits, it is probable that on the corresponding day in the year that is gone you were very dull and anxious. No doubt human beings sometimes successfully resist Nature's love of variety. Some men have an especial love for having and doing things always in the same way. They walk on special days always on the same side of the street; perhaps they put their feet, like Dr. Johnson, on the same stones in the pavement. They dress in the same way year after year. They maintain anniversaries, and try to bring the old party around the table once more, and to have the old time back. But we can not have things exactly over again. There is a difference in the feeling, even if you are able precisely to reproduce the fact. And indeed the wonder is that things are so much like, as they are to-day, to what they were a year ago, when we think of the innumerable possibilities of change that hang over us. Yes, we are drifting on and on, down to the great sea. Sit down, my friend, to write your article. You have written many. The paper is the same; the table on which you write is the same; the inkstand is the same; and the pen is made by the same mender that made all the rest. And it is possible enough that when the article is printed at last, your readers will say that it is just the same thing over again; but it is not. To your feeling this day's work is quite different from the work of all preceding days. There is an undefinable variation from whatever was before. And as weeks and months go on, there come to be differences which some may think more real than any in the comparatively fanciful respect of feeling. The hair is turning thin and gray; the old spirit is subdued. There are changes in taste, in judgment, in feeling, in many ways. Yes, we are all Going On.

I wish to stop. There is something awful in this perpetual progression. If the current would slacken its speed, at least, and let one quietly think for a little while. Let us sit down, my friend, by the wayside. We are old enough now to look back, as well as to look round; and to think how life is going with us, and with those we know. We are now in the middle passage: perhaps farther on. And if we are half-way in fact, assuredly we are far more in feeling. Though a man live to seventy, his first thirty-five years are by far the longer portion of his life.

Let us think to-day, my reader, of ourselves and of our friends; and of how it is faring with us as we go on.

It is a curious thing now, when we have settled to our stride, and are going on (in most cases) very much as we probably shall go on as long as we live, to compare what we are, with what we promised at our entrance on life to be. You remember people who began with a tremendous flourish of trumpets: people of whom there was a vague impression, more or less general, that they were to do great things. Sometimes this impression was confined to the man himself. Not unfrequently it was shared by his mother and his sisters. It occasionally extended to his father and his brothers. And in a few cases, generally in these cases not without some reason, it prevailed in the mind of his fellow-students. And it may be said, that a belief that some young lad is destined to do considerable things, if it be anything like universal among his college companions, must have some foundation. A belief to the same effect with regard to any young man, if confined to two or three of his intimate companions, is generally quite groundless; and if it exist only in the heart of his mother and of himself, it is quite sure to be absurd and idiotic. We can all probably remember individuals who, without any reason apparent to onlookers, cherished a most extraordinarily high opinion of themselves;

and one which was not at all taken down by frequently being beaten, and even distanced, in the competitions of college life. Such individuals, for the most part, indulged a very bitter and malicious spirit toward students more able and successful than themselves. I wish I could believe that modesty always goes with merit. I fear no rule can be laid down. I have beheld inordinate self-conceit in very clever fellows, as well as in very stupid ones. And I have beheld self-conceit developed in a degree which could hardly be exceeded, in individuals who were neither very clever nor very stupid, but remarkably ordinary in every way. Let me here remark, that I have known the most enthusiastic admiration excited in the breasts of one or two individuals by a very commonplace man. I mean admiration of his talents. And I beheld the spectacle with great wonder, not unmixed with indignation. I can quite understand man or woman feeling enthusiastic admiration for a great and wonderful genius. I can feel that warm admiration myself. And I can imagine its existence in youthful minds, even when the genius is dashed with great failings, or is of a very irregular nature. But the thing I wonder at, and can not understand, is enthusiastic admiration professed and felt for dreary commonplace. I am not in the least surprised when I hear a young person, or indeed an old one, speaking in hyperbolical terms of the preaching of Dr. Caird. I have heard it myself, and I know how brilliant and effective it is. But I really look with wonder at the young woman who professes equally enthusiastic admiration of the sermon of Dr. Log. I have heard Dr. Log preach. I could not for my life attend to his sermon. It was horribly tiresome. There was not in it a trace of pith or of beauty. It approached to the nature of twaddle. I was awe-stricken when I heard it described in rapturous phrases. I recognized a superior intelligence. I thought to myself, reversing Mr. Tickell's lines: "You hear a voice I can not hear; you see a hand I can not see." It is right to add, that the enthusiastic appreciators of Dr. Log were very few in number, and that they appeared to me nearly as stupid as Dr. Log himself.

But leaving Dr. Log and his admirers, let me say that very clever fellows, very stupid fellows, and very commonplace fellows, have started in life with a great flourish of trumpets. The vanity of many lads, leaving the university, is enormous. They expect to set the Thames on fire; to turn the world upside down. A few takings down bring the best of them to modesty and sense. And the men for whom the flourish was loudest do sometimes, when all find their level, have to rest at a very low one. Many painful mortifications and struggles bring them to it. Oh! if talent and ambition could always be in a man, in just proportion! But I have known the most commonplace of men, with ambition that would have given enough to do to the abilities of Shakspeare. And we may perhaps say, that no one who begins with a great flourish ever fails to disappoint himself and his friends. He may do very well; he may do magnificently; but he does not come up to the great expectations formed of him. I was startled the other day to hear a certain man named as a failure, who has attained supreme eminence in his own walk in life, and that a conspicuous one. I said, No: he is any thing but a failure: he has attained extraordinary eminence: he is a great man. But the reply was: "Ah! we expected far more! We thought he would leave an impression on the age, and he has certainly not done that; while it seems certain he has done the best he is ever to do." But look round, my friend, and think how the world goes with those who set out with you. They are generally, I suppose, jogging on humbly and respectably. The present writer did not in his youth live among those from whom the famous of the earth are likely to be taken. One or two of the number have risen to no small eminence; but the lot of most has circumscribed their ambition. It is not in the Senate that he can look to find many of the names of his old companions. It is not likely that any will be buried in Westminster Abbey. The life of two or three may perhaps be written, if they leave behind them a warm friend who is not very busy. It does not matter. The nonsense has been taken out of us by the work of life. And on the whole, we are going creditably on.

It is worthy of notice, that things which at the beginning were very bad, may be made good by a very small change wrought upon them. You see this in human beings, as they go on through life. You remember, I have no doubt, how various passages in the earlier writings of Mr. Tennyson, on which the *Quarterly Review* savagely fixed

at their first publication, and which Mr. Tennyson's warmest admirers must admit to have been in truth very weak, affected, and ridiculous, have by alterations of wonderfully small amount been brought to a state in which the most fastidious critic could find no fault in them. Just a touch from the master-hand did it all. You have in a homelier degree felt the same yourself, in correcting and re-writing your own crude and immature compositions. Often a very small matter takes away the mark of that Beast whose name shall not be mentioned here. I know a very distinguished preacher, really a pulpit orator, whose manner at his outset was remarkably awkward. No doubt he has devoted much pains to his manner since; though his art is high enough to conceal any trace of art. I heard him preach not long since, and his manner was singularly graceful, while yet there was no great change materially. You have remarked how the features of a girl's face, very plain at fourteen, have at twenty grown remarkably pretty. And yet the years have wrought no very great change. The face is unquestionably and quite recognizably the same; yet it has passed from plainness into beauty. And so, as we go on in life, you will find a man got rid of some little intrusive folly which just makes the difference between his being very good and his being very bad. The man whose tendency to boast, or to exaggerate, or to talk thoughtlessly of others, made him appear a fool in his youth, has corrected that one evil tendency, and lo! he quite altered—he is all right; he is a wise and good man. You would not have believed what a change for the better would be made by that little thing. You know, I dare say, how poor and bad are the first crude thoughts for your sermon or your article, thrown at random on the page. Yet when you have arranged and rounded them into a symmetrical, and accurate, and well-considered composition, it is wonderful how little change there is from the first rude sketch. Look at the waste scraps of paper before you throw them into the fire, and you will find some of your most careful and best sentences there, word for word. You have not been able to improve upon the way in which you first dashed them down.

There is a sad thing which we are all made to feel, as we are going on. It is, that we are growing out of things which we are sorry to outgrow. The firmest conviction that we are going on to what is better, can not suppress some feeling of regret at the thought of what we are leaving behind. When I was a country parson, I used to feel very sorry to see a laurel or a yew growing out of the shape in which I remembered it; and which was associated with pleasant days. There was a dull pang at the sight. I remember well a little yew I planted with my own hand. It looks like yesterday since I held its top, while a certain man filled in the earth, and put the sod round its stem. For some time it appeared doubtful if that yew would live and grow; at last it was fairly established, and it began to grow vigorously the second year. For a year or two more, it was a neat, shaggy little thing; but then it began to put out tremendous shoots, and to grow out of my acquaintance. I felt I was losing an old friend. Many a time I had stood and looked at the little yew; I knew every branch of it; and always went to look at it when I had been a few days away. No doubt it was growing better; it was progressing with a yew's progress; I was getting a new friend better than the old one; yet I sighed for the old one that was gradually leaving me. You do not like to think that your little child must grow into something quite different from what it is now; must die into the grown-up man or woman; must grow hardened to the world, and cease to be lovable as now. You would like to keep the little thing as it is; when it climbs on your knee, and lays a little soft cheek against your own. Even in the big girl of seven, that goes to school, you regret the wee child of three that you used to run after on the little green before your door; and in the dawn of cleverness and thought, though pleasant to see, still you feel there is something gone which you would have liked to keep. But it is an inevitable law, that you can not have two inconsistent good things together. You can not at once have your field green as it is in spring, and golden as it is in autumn. You can not at once live in the little dwelling which was long your home, and which is surrounded by the memories of many years; and in the more beautiful and commodious mansion which your increasing wealth has been able to buy. You can

not at once be the mercant prince, wealthy, influential, esteemed by all, though gouty, aging, and careworn; and the hopeful, light-hearted lad that came in from the country to push his way, and on whose early aspirations and struggles you look back with a confused feeling as though he were another being. You can not at the same time be a country parson, leisurely and quiet, living among green fields and trees, and knowing the concerns of every soul in your parish; and have the privilege and the stimulus of preaching to a congregation of educated folk in town. Yet you would look round in silence and regret, when you look for the last time upon the scenes amid which you passed some considerable part of your life; even though you felt that the new place of your labors and your lot were ever so much better. And though you know it is well that your children should grow up into men and women, still you will sometimes be sorry that their happy childhood will pass so swiftly and so completely away; that it must be so entirely lost in that which is to come after it; that even in the healthy maturity of body and of mind, there is so little that recalls to you the merry little boy or girl you used to know. Yes; we may have got on to something that is unquestionably better; but still we miss the dear old time and way. It is as with the emigrant, who has risen to wealth and position in the new world across the sea; but who often thinks, with fond regret, of the hills of his native land; and who, through all these years, has never forgotten the cottage where he drew his first breath, and the little church-yard where his father and mother are sleeping. Yes; you little man with the very curly hair, standing at that sofa turning over the leaves of a large Bible with pictures; stay as you are, as long as you can! For I may live to see you grow into something far less pleasant to see; but I shall never live to see you Lord Chancellor; though that distinguished post (it is well known) is the natural destination of a Scotch clergyman's son.

There is something rather awful implied in going on. Its possibilities are vast; you may yet have greatly to modify your opinion of any man who is still going on. The page is not finished yet; and it may be terribly blotted before it is done with. But the man who is no longer going on; the man who has finished his page and handed it in; is fixed and statuesque. There he is, forever. You may finally make up your mind about *him*. He can never do any thing to disappoint you now. But very many men do live on, just to disappoint. They have done their best already; and they are going on producing work very inferior to what they once did, and to what we might expect of them. You go and hear a great preacher; not upon a special occasion, but in his own church upon a common Sunday. You have read his published sermons, and thought them very fine; some sentences from them still linger on your ear. Unhappily, he did not stop with these fine things. He is going on still; and what he is turning off now is quite different. There is little to remind you of what he was. Your lofty idea of that great and good man is sadly shattered. No doubt, this is not always so. There are men who go on through life; and go on without deterioration. There are men who are always themselves; always up to the mark. But, for the most part, going on implies a great falling off. Think of Sir Walter Scott's last novels. Think of Byron's last poetry. Compare *The Virgin Widow* with *Philip Van Artevelde*. Think of the late productions of the author of *Festus*. Think of the last squeezings from the mind of Dr. Chalmers. Think of the recent appearances, intellectual and moral, of Mr. Walter Savage Landor. Think how roaring Irish patriots have become the pensioners of the Saxon, after having publicly sworn never to touch the alien coin. Think how men who have bearded the tyrant in their youth have ended in contented toadyism. We are never perfectly safe in forming a judgment of any man who is still going on; that is, of any living man. We shall not call him good, any more than happy, till we have seen the last of him. His very ending may be enough to blight all his past life. You can not as yet settle the mark of a man who is still painting pictures, still publishing poems, still writing books, still speaking in Parliament, still taking a prominent part in public business. He may possibly rise far above any thing he has yet done. He may possibly sink so far below it, as to lower the general average of his entire life. As regards fame, the right thing is an end like Nelson's. *He* ended at his best; and ended

definitively. Even Trafalgar would have been overclouded, if the hero had still kept going on. Think of him perhaps coming back; being made a duke; evincing great vanity; trying to become a leader among the Peers; and showing his lack of business aptitude and of sound judgment in politics; coming to be occasionally hissed about the streets of London; getting involved in discreditable tricks to gain office. Now, Nelson might have done none of these things. But I believe any one who reads his life will feel that he might have done them all. And was it not far better that the weak, but great man; the true hero; the warm-hearted, lovable, brave, honest Admiral, should be taken away from the petty and sordid possibilities of Going On? that it should be made sure he should never vex or disappoint us? that he should die in a blaze of glory, and leave a name for every Briton to cherish and to love? There are living men, concerning whom we might regret that they are still going on. They can not rise above their present estimation; they may well sink below it. It would be a great thing if some means could be devised, by which a man might stop, without dying. A man might say, after having done some difficult and honorable work, reaching over a large portion of his life: "Now, I stop here. I take my stand on what I have done; judge of me by that. I must still go on breathing the air as before; but I fear I shall let myself down; so don't inquire about me any farther." We all know that great and good men have sometimes, in the latter chapters of their life, done things on which we can but shut our eyes, and which we can but strive to forget. It seems quite certain that Solomon, albeit the wisest of men, became a weak old fool in his latter days; nor does the only reliable history say any thing of final repentance and amendment. And silly or evil doings early in life may be effaced from remembrance by wise and good doings afterward; while silly and evil doings in the last stage of life appear to stamp the character of it all.

It is this thought which sometimes makes the recollection that we are still going on, weigh heavily on one. There is no saying how the page of our life may be blotted before it is finished; and you must let me say, my friend, that the wise man will stand in great fear and suspicion of himself; and will very earnestly apply for that sacred influence which alone can hold him right to the end, where alone it is to be found. There are many things to make one thoughtful, as we remember how we are going on; but the great thing (as regards one's self) is, after all, the sight of the gloom before us, into which we are advancing day by day; not seeing even a step a-head. And to *that* may be added the occasional examples which are pressed upon us in the case of others, who once seemed very much like ourselves, of what human beings may come to be. And that which man has done, man may do. I see various things that are worthy of note, as I look round on the procession of the human beings I knew and remember, and think what comes as we go on. I see some who are rather battered and travel-stained. The greatness of the way is beginning to tell. I see some who look somewhat worn and jaded. There are little physical symptoms of the wear of the machine. The hair of certain men is going, or even gone. The teeth of some are not complete, as of yore. On the whole, I trust, we are gaining. I do not think there is any period of life that one would wish to live over again; no period, at least, of more than a very few days. There are wrecks, no doubt: some who broke down early, and have quite disappeared, one does not know where; and among these more than one or two whose promise was of the best.

Thinking of this one day, I was walking along a certain street, and came to a place where it was needful to cross. A carriage stopped the way, if that indeed can be called a carriage which was no more than a cab. And my attention was attracted by the cab-horse, which was standing close by the pavement. He was a sorry creature; but, as you looked at him, there was no mistaking the thoroughbred. There was the light head, once so graceful; the dilated, sensitive nostrils were still there, and the slender legs. But the poor legs were bent and shaky; the neck was cut into by the collar; the hair was rubbed off the skin in many places; and the sides were going with that peculiar motion which indicates broken wind. Here was what the poor horse had come to. At first doubtless he was a graceful, cheerful creature, petted and made much of in his youth. Probably he proved not worth training for a race-horse; and a thoroughbred without sufficient bone and muscle is

very useless for practical purposes; though it may be remarked that a thorough-bred with sufficient bone and muscle is the best horse for every kind of work except drawing coals or beer. So the poor thing became a riding-hack, and having fallen a few times was sold for a cab-horse. And it was plain that for many days he had been poorly fed, and hardly worked; and that now the cab proprietor was taking all he could out of him, before giving him over to the knacker, to be made into sausages. It is a popular delusion that the last stage in a horse's existence is to go to the dogs. There are some districts in which he goes to the pigs; and others in which he ends by affording nutriment, in a disguised form, to human beings. I am no alarmist, and I believe horse-flesh is quite salutary. All I have to add is, that persons having an antipathy to that article of food, had better inquire where their bacon was fed, and had better keep a sharp eye upon their sausages.

This, however, is a digression from a sad reflection. That poor cab-horse suggested various human beings whom I once knew. We have all known clever and promising youths who became drunken wrecks, and who deviated into various paths of sin, shame, and ruin. I laid down my pen when I had written that sentence, and thought of four, five, six, who had ended so, thinking of them not without a tear. Some were the very last you would have expected to come to this. There are indeed men whose career as youths is quite of a piece with their after-career of shame; but my early friends were not such as these. I can think of some, cheerful, amiable, facile in the hand of companions good or bad, who bade fair for goodness and happiness, yet who went astray, and who were wrecked very soon. I knew of one, once a man of high character and good standing, who had to become as one dead, and who was long afterwards traced, a sailor in distant seas. He had a beautiful voice; and I have heard that it was fine to hear him singing on the deck by moonlight as he kept his watch. Poor wretch, with what a heavy heart!

The change that passes upon one's self as we go on through life, comes so gradually through the wear of successive days, that we are hardly conscious how perceptibly we are getting through all that we have to get through here. We fancy, quite honestly, that we do not look any older in the last ten years, and that we are now just the same as we were ten years since. We fancy that, intellectually and morally, we are better; and physically just the same. People whose character and history are commonplace, at least fancy this in their more cheerful hours. But sometimes it comes home to us what a change has passed on us, perhaps in not a very long time. You will feel this especially in reading old letters and diaries; the letters you wrote and the diary you kept long ago. You probably thought that your present handwriting is exactly the same as your handwriting of ten years since; but when you put the two side by side, you will see how different they are. And in the perusal of these ancient documents, it will be borne in upon you how completely changed are the things you care for. The cares and interests, the fears and hopes, of the old days, are mainly gone. You have arrived at quite different estimates of people and of things; and if you be a wiser, you are doubtless a sadder man. And when you go back to the schoolboy spot, or to the house where you lived when you were ten years old, it will be a curious thing to contrast the little fellow of that time, with your own grave and sobered self. And you will do so the more vividly in the presence of some well-remembered object, which has hardly changed at all in the years which have changed you so much. It is a commonplace; but commend me to commonplaces for reaching the common heart: the picture of the aged man, or even the man in middle age, standing beside the tree of the river by which he played when he was a little child. The hills, the fields, the trees around are the same; and there is he, so changed! You remember Wordsworth's beautiful ballad, in which the old school-master is lying beside the fountain, by which he was used to lie in his days of youthful strength: you remember the same old man, looking back from a bright April morning, to another April morning exactly like it, but past for forty years. We may well believe, that there is not a human being but knows the feeling. It is some little thing in our own history that we remember; but it has touched the electric chain of association, and wakened up the past. There is a rude song current among the coal-miners of the north of England, in which an old man is standing by an old oak-tree, and speaking

to that unchanged friend of the change that has passed upon himself; and though the chorus, recurring at the end of each verse, is not so graceful as the lines which Wordsworth gives to Matthew, the thought is exactly the same. The words are: "Sair failed, hinny, sair failed now: sair failed hinny, sin I kenned thou." But of all the poems which contrast the much-changed man and the little-changed tree, I know of none more touching than one I lately read in an American magazine. It is called *The Name in the Bark.* Let me say, in passing, that it seems hard to understand why the poetry in the magazine I mean (it is the *Atlantic Monthly*) is so incomparably better than any we ever find in any English magazine. Here is a part of the poem:

"The self of so long ago,
And the self I struggle to know,
I sometimes think we are two—or are we shadows of one?
To-day the shadow I am,
Comes back in the sweet summer calm,
To trace where the earlier shadow flitted awhile in the sun.

"Once more in the dewy morn,
I trod through the whispering corn:
Cool to my fevered cheek soft breezy kisses were blown:
The ribboned and tasseled grass
Leaned over the flattering glass;
And the sunny waters trilled the same low musical tone.

"To the gray old birch I came,
Where I whittled my schoolboy name:
The nimble squirrel once more ran skippingly over the rail:
The blackbirds down among
The alders noisily sung,
And under the blackberry-trees whistled the serious quail.

"I came, remembering well,
How my little shadow fell,
As I painfully reached and wrote to leave to the future a sign:
There, stooping a little, I found
A half-healed, curious wound—
An ancient scar in the bark, but no initial of mine!"

I shall not add the verses in which the poet wisely moralizes on this instance how fast the traces we leave behind us pass away. Is it because I can remember how *my* little shadow fell many years since, that the last-quoted verse touches me as it does? We cast a different shadow now, my friend, from that little one we remember well; and it will not be very long till the shadows that fell and the substance that cast them shall have left here an equal trace.

Yes, my readers, we are all changed, as we are going on, from what we used to be. And it is no wonder we are changed. The wonder is that we are not changed a great deal more. How much hard work we have done; how much care, trouble, anxiety, disappointment, we have come through! What painful lessons we have been obliged to learn, every one of us! A great deal of the work we do is merely to serve the purposes of the time, and it leaves no trace; but when the work done leaves its tangible memorial, it often strikes us much; and we wonder to see how fresh and unwearied the man looks who did it all. I have seen the accumulated stock of sermons of a clergyman of more than forty years in the Church. It was awful to see what a vast mass they were. And even when we look not at the work of a lifetime, but at the results of what was no more than part of the work of a few years, we do so with a feeling of surprise that the man who did it was not at the end of his work much changed to appearance from what he was when he began it. Some time since I got back for a short time the prize essays I wrote while at college. They filled a whole shelf, and not a very small shelf. It was awful to look at them. They were all written before the writer was twenty-two. They were great heavy volumes — heavy physically; and intellectually and æsthetically still heavier. I tried to read one, but could not, because it was so tiresome; and I may therefore fairly conclude that no one will ever read them. Yet let me confess, that having arranged them on a lower shelf, I sat down on a rocking-chair immediately in front of them, and looked at them with great interest and wonder. In such a prospect, what could one do but shake one's head and sigh? The essays were all successful, Mr. Snarling. Every one of those prize essays got its prize. It is not in mortification that one sighs, but vaguely in the view of such an immense deal of hard work done to so very small purpose. And when you look at a man advanced in life, whose whole life has been one of hard work, you can not but confusedly wonder to see him looking as he does. To see Lord Campbell walking about at Hart-

rigge, when he had reached the highest place that a British subject can reach—to see the benignant and cheerful face of that remarkable man—and then to think of the tremendous amount of mental labor he had gone through in his long life, was a most perplexing and bewildering sight. When you are shown a ship that has come back from an Arctic voyage, you will generally remark that the ship looks like it; it has a weather-beaten and battered aspect, suggestive of crunching against icebergs and the like. But when you are shown a man whose voyage in life has been a long and laborious one, you are sometimes surprised to find that he looks as fresh and unwearied as if he had done nothing all his life but amuse himself.

I have already said that it is a great blessing that in this world there are such things as *Beginnings and Ends*. It is a blessing that we can divide our way, as we go on, into stages—that we are saved the wearying and depressing effect of a very long uniform look-out. We begin a succession of tasks, we end them, and then we begin afresh. And even those things in which, in fact, there are no beginnings nor ends, have them in our feeling. The unvarying advance of time is broken into days and weeks; and we feel a most decided end on Saturday night, and we make a new start on Monday morning. It must be dreadful for a man to work straight on, Sunday and all other days. I believe it is impossible that any man should do so long. The man who refuses to observe a weekly day of rest will knock his head against the whole system of things, to the detriment of his head.

But even more valuable than this obvious result of the existence of Beginnings and Ends is another. It is an unspeakable blessing that a man who has got himself thoroughly into a mess any where or in any occupation, should be able to get away somewhere else and begin again. If Mr. Snarling, who has quarreled with all his parishioners in his present charge, were removed to another a hundred miles off, I think he would take great pains to avoid those acts of folly and ill-temper which have made him so unhappy where he is. And let me say in addition, that most of us, as we go on, are admitting in our hearts always the imperfection and unsatisfactoriness of our past life. We are every now and then, in thought and feeling, beginning again. Men are every now and then cutting off the past; and acknowledging that they must start, or (more commonly) that a little while back they *did* start, anew. You occasionally avow to yourself, my reader, though not to the world, that you were a blockhead even two or three years ago. You occasionally say to yourself that your real life begins from this day three years. From that date you think you have been a great deal wiser and better. That course of conduct five years ago; those opinions you held then, that poem, essay, or book you wrote then, you are willing to give up. You have not a word to say for them. But *that* was in a former stage—in a different life. You have begun again since that; you have cut connection with it. You say to yourself: "It may be thirty years since I came into the world; but my real life—the part of my life I am willing to avow and to answer for—began on the first of January, 1860. I cut off all that preceded. I began again then; and as for what I have said and done since then, I am ready (as Scotch folk say) to *stand on the head of it*. It is only in a limited sense that I admit my identity with the individual who before that date bore my name and wore my aspect. I disavow the individual. I condemn him as severely as you can do." Tell me, my reader, have you not many a time done that? Have you not given up one leaf as hopelessly blotted, and tried to turn over a new one—cut off (in short) the preceding days of life and resolved to begin again? Do so, my friend. You may make something of the new leaf, but you will never make any thing of the old one. And whenever you find any human being anxious to begin again, always let him do it, always help him to do it. Don't do as some malicious wretches do, try to make it as difficult and humiliating as possible for him to turn over the new leaf. Don't try to compel him to a formal declaration in words that he sees his former life was wrong, and wants to break away from it; it was bitter enough for him to make that avowal to himself. You will find malicious animals who, if man or child has done wrong, and is sorry for it, and wishes to turn into a better way, will do all they can to prevent the poor creature from quietly turning away from the blurred page and beginning the clean one. If there be joy in heaven over the repenting sinner, it can not be denied that there

is vicious spite over the repenting sinner in certain hearts upon earth. Let us not seek to make repentance harder than it is by its nature. Unhappily there are cases in which neither in fact nor in feeling is it possible to begin again—at least upon an unsullied page. There are many people who never have a second chance. They must go deeper and deeper; they took the wrong turning, and they can never go back. Such is generally the result of crime. There is one sex, at least, with which the one wrong step is irretraceable. And even with the ruder half of mankind, there are some deeds which, being done, shut you in like the spring-lock in poor Ginevra's oak-chest. There is no repassing; and often the irreversible turning into the wrong track was not the result of any thing like crime; often the cause was no more than ill-luck, or some foolish word or doing. What disproportionate punishment often follows on little acts of haste or folly! In the order of Providence folly is often punished much more severely than sin. A young fellow, foolishly thinking to gain the favor of a sporting patron by exhibiting an extraordinary knowledge of the turf and the chase, cuts himself off from the living on which his heart was set. A flippant word, hardly spoken till it was repented, has prejudicially affected a man's whole after-career. Various men, in pique and haste, have made marriages which blighted all their life, and which brought an actual sorer punishment than that with which the law visits aggravated burglary or manslaughter. It is well in most cases to keep a way of retreat. It is well that before entering in you should see if you can get out, should it prove desirable. You must be very confident or very desperate if you cut off the bridge behind you, when in front there is but to do or to die. No doubt a habit of keeping the retreat open is fatal to decision of action and character. There is good, in one view, in feeling that we have crossed the Rubicon and are *in for it;* then we shall hold stoutly on; otherwise, we may be advancing with only half a heart. And there are important cases in which the difference between half a heart and a whole one makes just the difference between signal defeat and splendid victory.

It is to be admitted, my friends, that as we go on, the nonsense is being taken out of us. You have seen a horse start upon its journey in a very frisky condition, kicking about and prancing; but after a few miles it settles into doing its work steadily. That is the image which to my mind represents our career, going on. The romance has mainly departed. We look for homely things, and are content with them. Once, too, we expected to do great achievements, but not now. We know, generally, our humble mark. Indeed, the question as to the earning of bread and butter has utterly crowded out of our hearts the question as to the attainment of fame. We would not give one pound six and eight-pence for wide renown. We would not give the eight-pence for posthumous celebrity. We know our humble mark, I have said. I mean intellectually. And it is a great comfort to know it. It saves us much fever of competition, of suspense, of disappointment. We can not possibly be beaten in the race of ambition; we can not even injure our lungs or our heart in the race of ambition; because we shall not run it at all. A wise man may be very glad, and very thankful, that he does not think himself a great genius, and that he does not think what he can do very splendid. For if a man thought himself a great genius, he would be bitterly mortified that he was not recognized as such. And if a man thought his sermons or his books very fine, he would be mortified that his church was not crammed to suffocation, instead of being quite pleased when it is respectably filled; and he would be disappointed that his books do not sell by scores of thousands of copies, instead of being joyful that about half the first edition sells, leaving his publishers or himself only a little out of pocket, besides all their time and trouble. I know a man of highly respectable talents, who once published a theological book. Nobody ever bought a copy except himself. But he bought a good many, which he gave to his friends. And then he was extremely pleased that so many copies were sold. Was he not a wise and modest man?

Among other follies, I think that in going on, men, if they have any sense at all, get rid of Affectation. Few middle-aged men, unless they be by nature incurably silly and conceited, try to walk along the street in a dignified and effective way. They wish to get quickly and quietly along; and they have utterly discarded

the idea that any passer-by thinks it worth while to look at them. Generally speaking, they sign their names in a natural handwriting. They do not, as a rule, look very cheerful. They seem, when silent, to fall into calculations, the result of which is not satisfactory. The great tamer of men is, doubtless, the want of money. *That* is the thing that brings people down from their airy flights and romantic imaginations; especially when there are some dependent on them. You may dismiss the very rich, who never need think and scheme about money, and how it is to be got, and how far it can be made to go, as an inappreciable fraction of the human race. Care sits heavy upon the great majority of those who are going on. You know the anxious look, and the inelastic step, of most middle-aged people who have children. All these things are the result of the want of money. Probably the want of money serves great ends in the economy of things. Probably it is a needful and essential spur to work, and a useful teacher of modesty, humility, moderation. No man will be blown up with a sense of his own consequence, or walk about fancying that he is being pointed out with the finger as the illustrious Smith, when (like poor Leigh Hunt) he fears lest the baker should refuse to send him bread, or that the washerwoman should impound his shirts. It is a lamentable story that is set out in the latter portions of the *Correspondence* of that amiable but unwise man. And human vanity needs a strong pressure to keep it within moderate limits. Even the wise man, with all his unsparing efforts to keep self-conceit down, has latent in him more of it than he would like to confess. I lately heard of an outburst of the vanity latent in a decent farmer of moderate means. One market-day he got somewhat drunk, unhappily. And walking home, on the country road, he fell into a ditch, wherein he remained. Some of his friends found him there, and proceeded to rescue him. On approaching him, they found he was praying. For though drunk that day, he was really a worthy man: it was quite an exceptional case; I suppose he never got drunk again. They caught a sentence of his prayer. It was: "*Lord, as thou hast made me great, so do thou make me good!*" His friends had no idea of the high estimation in which the man held himself. He was, in the matter of greatness, exactly on the same footing with the other people round him. But he did not think so. In his secret soul, he fancied himself a very superior man. And when his self-restraint was removed by whisky, the fancy came out.

But he must have been at least a well-to-do man, who had this idea of his own importance. Many men are burdened far too heavily for that. Very many men in this world are bearing just as much as they can. A little more would break them down, as the last pound breaks the camel's back. When a man is loaded with as much work, or suffering, or disappointment, as he can bear, a very trifling addition will make his burden greater than he can bear. I remember how a friend told me of a time when he was passing through the greatest trouble of his life. He had met a very heavy trial, but was bearing up wonderfully. One day, only a day or two after the stroke had fallen, he was walking along a lonely and rocky path, when he tripped and fell down, giving his knee a severe stunning blow against a rock. He had been able to bear up before, though his heart was full. But that was the drop too much: and he broke down and cried like a child, though before *that* he had not shed a tear.

There are various conclusions at which men arrive as they go on, which at an earlier part of their journey they would have rejected with indignation. One thing you will learn, my reader, as you advance, is, what you may expect. I mean, in particular, how much you may expect from the kindness of your friends; how much they are likely to do for you; how much they are likely to put themselves about to serve you. I do not say it in the way of finding fault; but the ordinary men of this world are so completely occupied in looking to their own concerns, that they have no time or strength to spare for those of others. And, accordingly, if you stick in the mud, you had much better, in all ordinary cases, try to get out yourself. Nobody is likely to help you particularly. Good Samaritans, in modern society, are rare; priests and levites are frequent. I lately came to know a man who had faithfully and effectually served a certain cause for many years. He came at last to a point in his life at which those interested in the cause he had served might have greatly

helped him. He made sure they would. But they simply did nothing. Nobody moved a finger to aid that meritorious man. He was mortified; but after waiting a little, he proceeded to help himself; which he did effectually. I do not think he will trust to his friends any more. The truth is, that beyond the closest circle of relationship, men in general care very little indeed for each other. I know men, indeed —and I say it with pride and thankfulness—with whom the case is very different: I remember one who loved his friends as himself, and who stood up for them everywhere with a noble devotion: I think a good many of them caught from him the impulse that would have made them do as much for *him;* but *he* was one of the truest friends and the noblest-hearted men on this earth. Many months are gone since he was laid in his grave; but how many of the writers and readers of this Magazine cherish, more warmly than ever, the memory of John Parker! "If I forget thee," my beloved friend — you remember David's solemn words. But, compared with the chance acquaintances whom every one knows, *he* was as a Man among Gorillas. And I recur to my principle, that beyond closest ties of blood, men in general care very little for one another. You have known, I dare say, an old gentleman, dying in great suffering through many weeks; but his old club friends did not care at all; at most, very little. His suffering and death caused them not the slightest appreciable concern. You may expect certain of your friends to be extremely lively and amusing at a dinner-party, on the day of your funeral. I remember, a good many years ago, feeling very indignant at learning about a gay entertainment, where was much music and dancing, attended by a number of young people, on the evening of the day on which a fair young companion of them all was laid in her last resting-place. I am so many years older; yet I confess I have not succeeded in schooling myself to feel none of the indignation I then felt; though I have thoroughly got rid of the slightest tendency to the surprise I felt in that inexperienced time. For, since then, I have seen a young fellow of six-and-twenty engaged in a lively flirtation with two girls who were in a railway-carriage while he was standing on the platform, just the day after his mother's funeral. I have beheld two young ladies decked to go out to a ball. Their dresses happily combined a most becoming aspect with the expression of a modified degree of mourning. They had recently lost a relative. The relative was their father. I have witnessed the gayety and the flirtations of a newly-made widow. It appeared to me a sorry sight. There are human beings, it can not be denied, whose main characteristics are selfishness and heartlessness. For it is unquestionably true, that the most thorough disregard for the feelings, and wishes, and interest of others, may coëxist with the keenest concern for one's self. You will find people who bear with a heroic constancy the sufferings and trials of others; but who make a frightful howling about their own. And, singularly, those who never gave sympathy to another mortal expect that other mortals shall evince lively sympathy with them. Commend me to a thoroughly selfish person for loud complaints of the selfishness of others.

As you go on, you will come to understand how well you can be spared from this world. You remember Napoleon's axiom, that no man is necessary. There is no man in the world whom the world could not do without. There are many men who, if they were taken away, would be missed; would be very much missed, perhaps, by more or fewer human beings. But there is no man but what we may say of him that, useful and valuable as he may be, we might, sooner or later, with more or less difficulty, come to do without him. The country got over the loss of Sir Robert Peel and the Duke of Wellington; it misses Prince Albert yet, but it is getting over his absence. I do not mean to say that there are not hearts in which a worthy human being is always remembered, and always missed; in which his absence is felt as an irreparable loss, making all life different from what it used to be. But in the case of each, these hearts are few. And it is quite fit that they should be few. If our sympathy with others were as keen as our feeling for ourselves, we should get poorly through life; with many persons, sympathy is only too keen and real as it is. But though you quite easily see and admit that human beings can be spared without much inconvenience, when you think how the State comes to do without its lost political chief, and the country without its de-

parted hero, you are somewhat apt, till growing years have taught you, to cherish some lurking belief that you yourself will be missed, and kindly remembered, longer and by more people than you are ever likely to be. A great many clergymen, seeing the strong marks of grief evinced by their congregation as they preach their farewell sermon before going to another parish, can hardly think how quickly the congregation will get over its loss; and how soon it will come to assemble Sunday by Sunday with no remembrance at all of the familiar face that used to look at it from the pulpit, or of the voice it once was pleasant to hear. Let no man willfully withdraw from his place in life, thinking that he will be missed so much that he will be eagerly sought again. If you step out of the ranks, the crowd may pass on; the vacant space may be occupied; and you may never be able to find your place any more. There are far more men than there are holes, and all the holes get filled up. Who hastily resigned a bishopric? who in dudgeon threw up an Attorney-Generalship? who (thinking he could not be spared) abdicated the Chancelorship? And did not each of these men find out his mistake? The holes were filled up, and the men remained outsiders ever afterward. There is a very striking story of Hawthorne's, analyzing the motives and feelings of a man who, in some whim, went away from his house and his wife, but went no farther than the next street, and lived there in disguise for many years, all his relatives fancying him dead. And the eminent American shows, with wonderful power, how a human being so acting may make himself the outlaw of the universe. It needs all your presence, all your energy, all your present services, to hold you in your place in life, my friend. There are certain things whose value is felt through their absence; but I think that, as a general rule, a man can make his value felt only by his presence.

A friend of mine, who is a successful author, told me how, when he published his first book, he made quite sure that all his friends would read it, and more particularly that all his cousins, to whom he sent copies of his book, would do so. But he confided to me, as one of the lessons he had arrived at in going on, that it is with total strangers that any writer must hope for whatever success he may reach. Your cousins, thinking to mortify you, will diligently refrain from reading your volume. At least they will profess that they do so; though you will find them extremely well coached up in all the weak and foolish passages with which the reviewers have found fault. And these passages they will hasten to point out to your father and mother, also to your wife; at the same time expressing their anxious hope that these foolish passages may not do you harm. My friend told me how in his first book there was a sentence which his cousins feared would give offense to a certain eminent person who had shown him kindness; and the promptitude with which they could always turn up the passage, and the vigorous and fluent manner in which they could point out how offensive it must prove to the eminent person, testified to the amount of pains they had bestowed upon the discussion of the subject. Among the six hundred pages, how easily and swiftly they could always find this unlucky page! My friend told me that in a rather popular book of his, there was a passage of a few pages in length which had been severely criticised. Possibly it was weak; possibly it was absurd. I confess that I read it, and it did not strike me as remarkable. However, the critics generally attacked it; and probably they were right. A few weeks ago, my friend told me he met a very pretty young cousin of twenty years, for the first time. With a radiant smile, the fair cousin began to talk to my friend about his efforts in authorship. "O Mr. Smith!" said she, "do you know, the only thing I ever read in your book was that part where you said"—no matter what. "It was so funny! Do you know, Cousin Dick showed it to me the moment I arrived at Ananias street!" I have not the faintest doubt that Cousin Dick did. I have myself heard Dick quote a sentence from his relative's work, which sounded very flippant and presumptuous. I turned up the page and requested Dick to observe that he was (unintentionally, but) grossly misrepresenting the passage. It was not the least like what he quoted; and the version given by him was altered, greatly for the worse. Dick saw he was wrong. But several times since have I heard him give the incorrect quotation, just as before. Of course, his purpose was not to represent his relative as a man of taste and sense.

I think that as we go on we come to have a great charity for the misdoings of our fellow-men. There are, indeed, flagrant crimes, whose authors can never be thought of but with a burning abhorrence. I have heard of the doings of men whom I should be happy to help to hang. But I am thinking of the little misdoings of social life in a civilized country. As for deliberate cruelty and oppression, as for lying and cheating to make money, I never have learned to think of them but with a bitterness approaching the ferocious. Nor have I grown a bit more charitable with advancing years in my estimate of the liar, cheat, and blackguard, (of whatever rank,) who will mislead some poor girl to her ruin. I should be glad to burn such a one, with this hand, with a red-hot iron, upon the forehead with the word LIAR. And something of the emotion I feel in the thought of him extends to the thought of the young ladies who waltz with him, knowing perfectly what he is; and to the thought of the parsons who toady him, in hope of a presentation to the wealthy living of Soapy-cum-Sneaky. But, setting these extreme cases aside, you will come, as you go on through life, to see some excuse for various little misdoings, toward which you felt somewhat bitterly in earlier years. You will come to frankly recognize the truth, which at first you are slow to admit, that there are certain positions which are too much for human nature. I mean too much for human nature to hold without exhibiting a good deal of pettiness, envy, spitefulness, and malevolence, unless, indeed, with very fine and amiable natures. There is an ecclesiastical arrangement peculiar to Scotland; it is what is termed a *Collegiate Charge*. It means that a parish church shall have two incumbents of authority, dignity, and eminence, exactly similar. The incumbents, in many cases, quarrel outright; in many more, they do not work cordially together. In a smaller number, indeed, they have been known to be as brothers, or as father and son. There is something trying in the position of a parish clergyman who has a curate, or assistant, who is more popular than himself. You may sometimes find a church poorly attended when the clergyman preaches, but crowded when the curate does so. Even in such a case, if the rector be a good man, and the curate another, perfect kindliness may exist between the rector and the curate; but I doubt whether that kindness is much to be expected from the rector's wife. And when the curate at length gets a parish of his own, he need not expect that his old principal will often ask him back to preach. Now, many people will be found ready to speak with much severity of the principal who acts thus; and to blame the clergyman who, not being able to fill his church himself, prefers having it empty to seeing it filled by any one else. Such people are unquestionably wrong. They expect from the poor clergyman more than ought to be looked for from average human nature. The clergyman's conduct is very natural. Put yourself in his place: look at the matter from his point of view. You would not like yourself the thing he does not like. You would very possibly do exactly what he does. And you might do it all quite conscientiously. You might fancy you had high and pure reasons for what you did, and that there was no intrusion of jealousy. The young curate's sermons were, very likely, very crude and extravagant; and you may honestly think it your duty to prevent your people from being presented with spiritual food so immature. And rely upon it, those men who carefully exclude from their pulpits all interesting and attractive preachers, and put there (in their own absence) the dullest and poorest preachers they can find, though doubtless actuated in great measure by a determination that they themselves shall not be eclipsed, but shall rather shine by comparison, are quite able to persuade themselves that they act from the purest motives. But even while you pity the men (let us hope there are very few) in whose mind such unworthy considerations have weight, do not blame them severely. They are in a difficult position. No doubt they would find it happier as well as worthier to spurn the first suggestion of petty jealousy; no doubt the magnanimous man would do so; but there are men who are not magnanimous, and who could no more be magnanimous than they could be six feet high, or than they could write *King Lear*. Now, my friend, as you go on, you come to understand all these things. You learn to make great allowances for the pettiness of human nature. You come to be able to treat with cordiality people to whom in your hot and hasty youth you could not have spoken without giving them a bit of your mind which they would not have

liked to hear. And when I say that with advancing years you come to excuse human misdoings, I do not mean that as we grow older we come to think more lightly of the difference between right and wrong, or between the generous and the mean. I hope we know better than that. It is another principle that comes into play—the principle, to wit, that not being without sin yourself, you should be slow to cast a stone at an erring brother. It has been already said that there are cases as to which we shall not reason thus. Of heartless and deliberate cruelty and treachery we shall never think but with fury, and we do not wish ever to think but with fury. Give me the knout, and lead out one of several human beings of whom I have heard, and I will warrant you you should hear extensive howling! I am not afraid to plead the highest of all precedents for the permission of the bitterest wrath and for the dealing of the sharpest blows. But I humbly and firmly trust, my friendly reader, that in you and me there is nothing like heartless, deliberate cruelty and treachery. We have no sympathy at all with these, any more than with the peculiar taste which makes worms like filth. But as to very much of human error and weakness, do you not feel in yourself the capacities which (though restrained by God's grace) might have brought you to all that? The thing we can least forgive is that which we can not imagine how any one could do—that which we think we have in us nothing like.

In your earlier days, you were perpetually getting into scrapes, by speaking hastily and acting hastily. As you go on, you learn by experience to avoid these things in great measure; and you learn to be very cautious as to the people you will take into your confidence. It is a sorrowful lesson of experience, but it *is* a lesson of experience, that there are many people to whom you should never say a sentence, without first calculating whether that sentence can be repeated, or can be misrepresented, to your disadvantage. Like a skillful chess-player, you need to consider what may be the result of this move. It is to be admitted, that much of worldly wisdom is far from being a pleasing or noble thing. You learn by experience a great deal which it is right you should know and act upon, yet which does not ennoble you. It is a fine sight, after all, a warm-hearted, outspoken, injudicious man of more than middle age! I know well an eminent professor in a certain university, who is a very clever and learned man, and a very injudicious one. I admire his talents and his learning; but I feel a warm affection for his outspoken and injudicious honesty and truthfulness. I am quite sure that if he thought a neighboring marquis a humbug, he would call him one. I have the strongest ground for believing that if he thought a bishop a fool, he would say so. Let us ever try to hold our prudence free from the suspicion of baseness. I trust that as we go on, we are not coming to practice sneaky arts to the end of getting on. Sneakiness, and underhand dealing are doubtless to be reckoned among the arts of self-advancement. Honesty is, in many cases, unquestionably the very worst policy. But though honesty be so, honesty is the right thing, after all! But honest men sometimes think to possess, together, two inconsistent things. They think to possess the high sense of scrupulous integrity; and at the same time the favor, patronage, and profit, which can be had only by parting with *that*.

We are all going on: a man here and there is also getting on. As you look round upon the people who started with you, you will discern that even those who are doing well in life, for the most part reached their utmost elevation before very many years were gone; and for a large tract of time past have not been gaining. They are going on, in short: Time makes sure that we shall all do *that;* but they are not getting on. Their income is just the same now that it was five or ten years since; and the estimation in which they are held by those who know them has neither grown nor lessened. But there is a man here and there who is growing bigger as well as growing older. He is coming, yearly, to be better known: he is gaining in wealth, in influence, in reputation. Every walk of life has its rising men. There are country gentlemen who gradually elbow their way forward among the members of their class, till they stand conspicuously apart from them. So with painters, authors, barristers, preachers. Who are they, among those whom I know, who are making way, and rising in the world? And what is the secret of their success? I must stop and think.

A. K. H. B.

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SOCIAL LIFE IN MEDIEVAL ENGLAND.*

WILLIAM of Malmesbury's tribute to the magnificence and solidity of the Norman buildings as compared with those of the Anglo-Saxon, to which we referred before we were carried away by this digression, is perfectly just. The Norman house was more commodious and convenient; and, although the notion of raising a floor above the ground-floor can not be strictly said to have originated with the Normans, they are fully entitled to the credit of having been the first to develop its capabilities. A few rare examples may be found amongst the Anglo-Saxons of a room at the top of a flight of stairs; but it was usually very small, a mere crib, or look-out, and was called the *soler*, apparently because it was nearer to the sun than the lower apartment, the progenitor, probably, of that cramped, low-roofed room which the French call the *entre-sol*. It was the Normans who discerned in this crude beginning a power of useful expansion, and who contrived an apartment aloft where they could dine luxuriously *en particulier*. To them also may be ascribed the honor of having invented the parlor, literally (*parloir*) a room for talking in, derived from the usages of the monastic establishments. This is not the place to enter into architectural details, but we may observe generally that social progress and the progress of house architecture throw a vivid, illustrative light upon each other. When the conntry was in a lawless state, and the means of intercommunication was hazardous and difficult, when might made mincemeat of right under a feudal dispensation, and nothing was safe but the strong hand, houses were built mainly with a view to security; the walls were thick, and the ditches were deep, and drawbridges, loop-holes, and battlements, marked the elaborate precautions that were deemed necessary for the purpose of protection. As the danger gradually diminished, and law and order diffused feelings of confidence throughout the country, houses ceased to be built like fortresses, and security was less thought of than domestic accommodation and the gratification of taste. And thus we have come down from feudal castles to gentlemen's seats and rich men's "follies." The change affects every particular connected with private dwellings. Instead of seeking strategic positions, perched on the summits of inaccessible hills, or down in the angle of a valley to command the mouth of a gorge, or the banks of a river, we now look for situations agreeable to the eye, or suitable to the constitution; we consult climate, soil, and the winds, without caring at what points of the compass an enemy could bombard our windows, or rake our slates and chimney-pots with a volley of grape-shot; and we lavish upon the luxury of the interior those resources which used to be expended upon the outworks.

But it is only in their luxuries, and the arts which administer to them, that the Normans contrast favorably with the Anglo-Saxons. Could we get at sufficient means of comparison, we suspect it would be found that in other directions, especially in their morals, the Anglo-Saxons possess higher claims upon our respect. The gallantry which rose out of the feudal system was far from being so noble or manly as it is made to look in the ballads; and it may be gravely doubted whether women were ever worse treated than in what Burke calls the the age of chivalry, or, at all events, in the early part of it. Wives were subjected not only to barbarous cruelty, but to indignities more dreadful than the pincers of the torturer, or the horrors of the *oubliette*. Precepts of craft and caution constituted the current wisdom of the day. Young people entering the world were recommended to keep up a showy exterior, to be very attentive to the forms of religion; but to believe in nobody or nothing, and to keep their thoughts to themselves. A youth was thus advised by his father not to quarrel

* Concluded from Page 298.

before people, lest his opponent, in an excess of passion, might let out something to his discredit; and he was further counseled, after he married, never to reveal to his wife any thing he wished to conceal. These cunning maxims were mixed up with others which were not wholly of so selfish and mean a character, and in which a stray gleam of munificence and generosity occasionally breaks out; but, taken in connection with the profligacy, arrogance, and oppression of the feudal ages, and the treatment of women generally, they lose all value in the setting, and their exceptional grace only serves to give them a suspicious significance.

The advice to young ladies, on questions of deportment and modesty, which abound in the romances and text-books of the middle ages, can not be properly appreciated without bearing in recollection the freedom of intercourse which subsisted between the sexes. The life of the times is a practical commentary on its written ethics, and the one must be read by the light of the other. Young ladies were in the habit of receiving the visits of gentlemen in their chambers while they were in bed, and frequently of returning the visits under similar circumstances. Candlesticks did not enter into the economy of medieval houses, and the old Saxon method of fixing a candle on a stick, from whence we obtain our word candlestick, had not undergone much change under the Normans. Usually the stick, or spike, formed a part of the framework at the head of the bed, so that the light might be easily extinguished by the person in bed or going to bed. To these circumstances may be attributed the fact that the visits on both sides were often made in the dark, and were, consequently, fruitful of scandals.

The beds for many centuries were made of straw. Feathers came very slowly into use. At first we hear of white straw being shaken and laid, and covered with a quilt of feathers; and it was not till the fourteenth century that beds began to be made altogether of feathers; but they were limited to the highest and wealthiest classes. After another interval beds came to be decorated with curtains, and to put on a look of warmth and coziness, with, probably, very little of the reality. Throughout all these advances in the formation of the bed and its furniture, it was the custom for both sexes to sleep without night-dresses of any kind. The custom was not confined to any particular grade of the community. It was universal, from the princess to the chambermaid. Strange things are recorded in the tapestries and illuminations as arising out of these usages. With the body unprotected by a shred of covering, and the head wrapped in a warm kerchief, a duke's daughter, destitute of a hand candlestick, is lighted to bed by a candle stuck on a spike in her bedstead; people are seen lying in a state of nudity in adjacent beds, while others are passing to and fro in the same condition; and kings and queens are represented in bed with their crowns on; upon which latter incident Mr. Wright observes with inimitable *naïveté*: "The crowns on their heads are a mere conventional method of stating their rank. Kings and queens were not in the habit of sleeping in bed with their crowns on their heads."

The medieval romances, which, upon the whole, present a tolerably faithful reflection of the actual cotemporary life, are as full of the inevitable consequences of these free and open customs as eggs are said to be full of meat, or Spanish comedies of intrigue. "Medieval society," says Mr. Wright, enunciating a melancholy and too palpable truth, "was profoundly immoral and licentious." Elsewhere he says, that "the clergy were the great corrupters of domestic virtue amongst the burgher and agricultural classes." The upper classes did not need the temptations and sanctions of the Church. Their demoralization came from within. It was the natural issue of insular training and exclusive privileges. The extremities to which the Norman aristocracy carried the indulgence of their passions may be least offensively exemplified by the wanton cruelty they displayed in their field sports. The forests were preserved with barbarous severity. Whoever killed a hart, or a hind, or a boar, was condemned to be blinded. The chase was one of the favorite pastimes, and no considerations of justice or humanity were allowed to check the career of the hunter, whose course was a track of desolation to the tillers of the soil. Respect for private rights was unknown. No such rights can be said to have existed, for they were never recognized. Cultivated lands, covered with growing crops, were ridden over and trodden down with impunity, as if they had been so much waste common. Nor was this all, perhaps it was the least

of the evil. Having destroyed the crops, the hunters quartered themselves on the owners; and if the provisions they found in the houses fell short of their wants, they inflicted punishment on the inmates. Darker crimes followed, which left disgrace and bitterness behind. But we must not trace the picture any farther. Whatever excesses the imagination can conceive associated with the gratification of brutal lusts, may be ascribed to the Norman aristocracy on their hunting excursions, without much risk of exaggeration.

The ladies who were brought up in the midst of such experiences could not be expected to be very tender of heart, or modest of bearing. Any such expectations would be grievously disappointed by the facts. They were as passionate, self-willed, and imperious as the heroes who wooed them with devotional homage before marriage, and beat them afterward. Their "gentle blood" was as incapable of submitting to restraints in the pursuit of pleasure, as if it coursed in the veins of the coarser sex, whose license they constantly usurped. They not only laid aside that reserve which is almost a constitutional attribute of women, but they took the initiative in those advances which, all the world over, are assigned to the province of men. They did not always wait to be solicited, or to observe the effect of their charms. When the train of passion was fired, they followed it up to its conclusions with an ardor which showed how completely the positions of the sexes were reversed. This state of things was not brought about without a corresponding corruption of manners in the general intercourse of society. Conversation became flooded with impurities. The common language, written and spoken, was impregnated with that character of dissoluteness which pervaded the highest and best educated circles.

The rules which were inculcated for external conduct, or superficial manners, harmonize curiously with the libertinism which infected the core of society. They embrace minute regulations for the cultivation of that kind of artificial breeding which is the obvious veneer of an age of licentiousness. They abound in demure restrictions and repressive maxims for behavior, all tending to the production of the results which they affect to deprecate; and they illustrate, in a very remarkable way, the infancy of that condition of society, refined, hollow, and profligate, which culminated, some hundreds of years afterward, in the masques of Saint Germains and the voluptuous splendors of Versailles.

Ladies, for instance, are warned that it is unbecoming to talk much, that they should not boast of the attentions they receive from the other sex, nor betray too much freedom in their sports and pastimes, lest it might encourage libertinism; that they are not to look too much at men, nor to suffer men to take certain liberties with them, a bare allusion to which, in the present day, would be an outrage. Scolding, swearing, uttering falsehoods, eating and drinking too freely, and getting drunk, are severally reprehended; and ladies are advised to keep their nails cut, and their hands clean, and, when they have handsome faces, to be sure to let them be seen. Highly suggestive too, are the instructions relating to church-going, remembering how strictly observances of that description were kept up in later times by such ladies as Madame de Maintenon, and Louise de Querouaille. On the way to church a lady was not to "trot or run," says a *trouvère* of the thirteenth century, who compiled a code of instructions for young ladies, referred to by Mr. Wright; but to walk seriously, looking neither to the right nor the left, taking care not to go on in advance of her company, and observing to salute "debonairely" all persons she met. When she arrived in church she was to behave with becoming gravity, she was not to suffer her eyes to wander, whatever her thoughts might do, and she was to be strictly attentive to the forms of the service. Equally characteristic are sundry prudential hints against the indulgence of a dangerous curiosity. In passing people's houses, ladies are not to look into them, "for," says the shrewd instructor, "a person often does things privately in his house, which he would not wish to be seen, if any one should come before his door." The same discreet caution was to be observed on entering a house, or a room. The visitor was to cough at the entrance, or to speak loud, so that the person within should not be taken by surprise.

Notwithstanding all these indications of a life of *finesse* and levity, the households of the ladies of the middle ages appear to have been conducted with order and pro-

priety. The characters of servants, especially if they came from a distance, were carefully examined; and every servant had special duties to perform, which very much resembled the ordinary duties performed in our own day by those laborious maids-of-all-work, whose worsted stockings were celebrated in a prose Idyl by Leigh Hunt. Sweeping the hall, dusting the forms, benches, and footstools, shaking the cloths and carpets, and cleaning and arranging the chambers, constituted the routine of the housemaid's morning tasks five hundred years ago, just as they do in the nineteenth century. It must be confessed that we do not get up quite so early as our Norman ancestors, who opened their shutters at the dawn of day, and that the feeding of "chamber animals" does not enter into the regular domestic programme. Nor can we take credit for feeding our servants so plentifully as they were fed in the old baronial halls. The day's proceedings in that particular are worth noting for more reasons than the abundance of the provisions. The first meal was at mid-day. It consisted of one meat, provided without stint, and of one drink, wine or otherwise, which was to be "nourishing but not heady." The servants were admonished at this meal, which was to lay the foundations for a day of incessant industry, that they were to eat and drink heartily; but they were required to do so without loitering or gossiping. The moment they began to slacken, and talk, and lean their elbows on the table, they were ordered to rise, and the table was removed. Another repast of a lighter kind followed at an interval; and a third succeeded in the evening, as abundant, and of the same character, as the first.

The ladies attended personally to their household affairs, and looked after their servants to see that they executed their work properly. It was the business of the lady of the house every night to ascertain that the doors were locked, and the fires put out, to take charge of the keys, and to send the servants to bed, a strict watch being kept over their candles, so that none should be left alight after the household had retired. The mistress of a large establishment in these times had other, not less arduous, and even more important, duties to discharge. We frequently read in the medieval romances of wounded knights being tended and cured by maidens, who, from first taking compassion upon them, end by marrying them. So, also, good wives are described keeping in their houses potent herbs, vegetable decoctions, balsams, and ointments, with which they effected signal cures. Professional aid was rare, and seldom available at a short notice, and ladies benevolently took upon themselves the double offices of nurses and doctors, and even went through a certain course of study to fit them for their labors. They studied in the garden, and picked up all the oral traditions that came floating down to them concerning the occult virtues of plants and flowers. Every house had its garden, and every garden had its medicinal herbs, and there was always a fair student moving about amongst them culling knowledge, and speculating on its uses. No doubt there was a dark as well as a bright side to this knowledge. The restorative principle in herbs was coëxistent with a destructive principle; and while the lady was learning the art of preserving life, she was also learning how to destroy it. The knowledge of medicines brought with it the knowledge of poisons, and ladies became skillful adepts in both. The poisoners of the middle ages are amongst the infamous celebrities of history, and it is hardly necessary to add that a large majority of them were women.

Although the Normans transplanted into England many French usages and luxuries, they failed to effect any material change in the national character. The old stubborn Saxon element still remained predominant. There were some things with which it could not assimilate. No art or influence, for example, could have succeeded in naturalizing amongst us those erotic tribunals which flourished in Provence and elsewhere in France, under the name of Courts of Love. The good sense of the people would have revolted from any attempt to give shape and fashion to an institution, which undertook to impart the force of law to the subtleties of a fantastic code of sentiment. Yet the Courts of Love sprang from the feudal system, and marked more expressively than any recognized laws the peculiar tendencies of society during the middle ages. Chaucer made them known in England by a famous poem descriptive of the general nature and functions of a Court of Love, which if not strictly copied from the Provencal courts, preserved their principal features under

other forms and names. The English, however, regarded all such descriptions as mere poetical reveries. Chaucer's palace of Love, its statues, and symbolical personages, commanded no more credence than an old legend of the Northern mythology, or an Oriental allegory. Had the charming Countess of Narbonne herself, the most illustrious of all the lady presidents, illustrious alike by her beauty and her judgments, come over to England, and held one of her courts under an elm tree in some royal park, the proceedings would have been looked upon by the people in those days as they were accustomed to look upon a tournament or a bull-bait. They would have attached no serious meaning to such an assembly, and would have treated its verdicts with ridicule. Imagine at any time in England a court, composed of ladies and gentlemen of high rank and social weight, sitting in the open air to receive and decide upon complaints concerning matters of gallantry, to resolve dilemmas of love, sometimes actual and sometimes suppositious, for the guidance of both sexes, and to hear contentions or arguments upon what may be called points of law in relation to the rights, duties, and responsibilities of lovers in every stage of their intercourse. The custom of Dunmow was a reality, because it touched a passage of domestic life which people were rather vain of, and because it was attended by a practical result. But here was a tribunal instituted for the public trial of questions over which every body concerned was interested in throwing a vail of secrecy, and the decisions of which bound nobody, and led to no result whatever. Such elaborate trifling did not suit the Saxon genius. The people saw their way clearly to substantial improvements; casuistry was much too fine and frivolous for their vigorous intellects. They discerned at once the value of a new invention by which discomfort was minimized and enjoyment increased; but could see no profit in investigating such gratuitous problems as, "Which should you prefer — that your mistress should be dead, or married to another?" And here the line may be drawn loosely but intelligibly, between what we have derived and rejected from the French. That the Courts of Love never found their way into England, either in sport or earnest, is singular, nevertheless, since the roll of their presidents includes two names associated with our throne. Queen Elèonore, first married to Louis VII. of France, and afterward to Henry II. of England, was one of the most celebrated of the Ladies President or Queens of Love, and her decisions are recorded in the judgments of the tribunal under the signature of Regina Ailenora; and no less illustrious as a President or Prince of Love, was Richard Cœur de Lion, who held that office alternately with the Dauphin of Auvergne, the Count of Provence, and Alphonsus of Arragon.*

One of many reasons—independently of the radical differences of national character—why these open customs, which, so to speak, let the daylight in upon the most secret recesses of life, found no favor in England, was that from the time of the Anglo-Saxons downward the people manifested an increasing disposition to cultivate privacy of their homes. The old hall, with its glare and publicity, was insensibly superseded by the quiet dining-room; and then came the happy thought of the parlor, a room in which a few friends might meet together and converse without restraint. The parlor superseded the uses of the bed-chamber as an apartment for receiving visitors, and conducting the affairs of the household; and ladies, thus relieved from the intrusion of strangers, were not slow to appreciate the advantages of retirement. The universal utility of the parlor was developed in proportion as the old hall disappeared, and the bed-chamber ceased to be a reception-room. It became the center of the social system. Here all amusements of the inmates were carried on, games, dances, and merry-makings; here young ladies occupied themselves with fancy works, which they often turned to profitable account; and here, too, the passion for cards and dice was first cultivated in English houses. As the home feeling deepened, people began to collect about them durable evidences of settling down, and to think of transmitting their possessions to future generations. The age of heir-looms commenced under these fostering auspices. Amongst its conspicuous signs were the accumulation of plate and linen, the institution of cupboards and lock-up places to keep the new family treasures in, and the pains which were taken to display them on special occasions. The political changes that were passing over the nation in the fourteenth and fifteenth centuries, tended materially

* *Works of Chaucer*, Ann. Ed. iv. 116.

to strengthen local attachments and nourish domestic habits. Feudalism was passing away; the higher and lower classes were coming more closely together; a strong feeling of independence was growing up amongst the public at large; the Englishman's "house" was assuming every day more and more the attributes of the "castle;" and the growing interest which men were acquiring in domestic life rendered their homes more than ever sacred in their eyes.

We have not thought it necessary to weave through these desultory observations, a running commentary on Mr. Wright's volume upon *Domestic Manners;* but our frequent references to him will evince the estimation in which we hold his labors. Nothing short of a life passed in the study of medieval literature could have amassed and arranged the vast amount of details accumulated in his book. We do not say that the arrangement is exactly what we should desire, or that the treatment is in every respect what it might have been; but we are far from thinking that the task, as a whole, could have been executed so well by any body else. Mr. Wright makes us fastidious by the very richness of the banquet which he provides. To the variety and profusion of the feast we bear cheerful testimony; and if we desiderate any element of pleasure or enjoyment at this bountiful table, it is that our host has served us too amply, and detained us too long. We want essences here and there, where he has given us solid dishes, and we miss that art of selection and condensation by which the palate is spared a succession of identical or similar flavors.

The fact seems to be that Mr. Wright has been collecting his materials for a great number of years past, and that he has been collecting them in the only way such materials can be collected, by multitudinous scraps, which, piled up, heap upon heap, grow into a mountain of chaos at last. The attempt to reduce this chaos to order, and to present the results of so much discursive investigation in a shape of historical continuity, involves an amount and description of labor from the contemplation of which we recoil in alarm. Parts of this book appear to have been written at one time for one purpose, and parts at another for another purpose, and the parts to have been afterward put together with a view to the production of a complete whole. The process was hazardous, and the skill shown in its execution is considerable. This way of writing in detachments, of taking historical studies in compartments, as it were, is attended by unavoidable risks. There is the risk of committing unconscious repetitions, of falling into inconsistencies of statement, and of failing to bring about the requisite symmetry in the proportions of the work. Mr. Wright has not entirely escaped these dangers. The book, in spite of the world of pains bestowed upon it, has a straggling air; we often feel the want of dates, although we know how difficult it would be to supply them, and that there is a division of periods which ought to content us; we find the same things recurring in different places, easily seen by us who read the entire volume through from beginning to end (and we have not missed a page) for the first time, although by no means easy of detection to the author whose head is full of them; and we are sometimes perplexed by an apparent confusion, which may be no confusion after all, but an uncertainty of expression arising from the nature of the evidence upon which the descriptions are founded, and which opens a wide door to guess-work and speculation. In saying this, we are saying the worst we have to say, and archeologists will understand how little this is in comparison with the responsibilities of such an undertaking. The merits of the work are obvious. We wish it had been shorter, because it would then have been more readable for the million. But students of social history will find nothing tedious in quotations otherwise superfluous, nor will they complain of space bestowed upon matters not very important in themselves. The test of such books is that they should be comprehensive and trustworthy. This book is both. It is a complete store-house of facts, gathered with diligence from a multitude of sources, and placed before the reader without varnish or exaggeration. Above all things, it is free from prejudices. It is written from no particular point of view, and betrays none of the vices of partisanship. Nor does its attraction lie wholly on the side of the grave and useful. It is full of pictures of extinct manners, as amusing as if Mr. Wright had dug up a thousand volumes of some *Punch* of the middle ages, and given us the cream of them, wood-cuts included, interspersed through his work.

From the Dublin University Magazine.

BY-GONE MANNERS AND CUSTOMS.

Part II.

The fashionable costume of 1790 differed much less than may be supposed from that of three-score years subsequently, and much more from that of 1804 than of 1850. The French fashions of 1793, or a little preceding, which gave the law to Europe, perished with the monarchy. Many living—then young children — must remember when the cane and whalebone of the maternal hoop were discarded, and how they were converted into childish bows for their arrows of reed. Nor was it the costume of the fair sex alone which was thus changed. Wigs, small and large, those ridiculous ornaments of the Bourbon regime for more than a century, whether natural or artificial, sheep-tailed, episcopal, or judicial, on the head of the judge, the bishop, or the beau, were scurvily treated. Whether they really imparted wisdom, or, what is much the same thing, fixed the reputation of it, they were long retained, and in the law are still much more tenaciously clutched than are certain important clauses in *Magna Charta*. About this time—we speak of the commencement of the century—square-toed shoes gave way to sharp, to round, to lefts and rights, and to all manner of innovations in turn. Hessian boots came in; strings in the shoes superseded buckles in full dress —thus revolutionizing fashion at the nether extremities. These in the law courts were of little moment, while the wig remained sacred and free from contempt in its own peculiar sphere, rendering solemn verbiage too often of more than its intrinsic value twice told, giving the reputation of reason where it may be absent; and if not too wise in philosophy, meaning much, where in managing a case in the Four Courts, the sage

> ——"Veers, and talks, and steers a cause'
> Against the weather-gage of laws;
> And rings the changes upon cases
> As plain as noses upon faces."

Then, too, was the age of blue coats, gilt buttons, buckskin breeches, and brown-topped boots. This order of boots was never worn in England with tight white leather pantaloons, as it was in France by the military men, because the upper part of an entire black boot was apt to soil the white leather, which the brown top avoided. There is a full-length portrait of Napoleon I. in this booted costume, very common, engraved from a picture by Isabei. In addition to this the French soldiers cropped their hair, which had only the effect of making the queues of our soldiers be more carefully cherished as a mark of loyalty to the old fasion, and of disesteem for French innovations.

Mr. Pitt, so attached to his master's views in behalf of the leading European potentates, incontinently introduced this mark of Jacobinism by the hair-powder tax, at least among civilians. Money was a stronger argument than any political antipathy. It was the minister's duty to raise money in that and other ways, in order, as that sad wag, Peter Pindar, wrote in an address to Pitt, that he might sufficiently

> "Sate the golden thirst of kings and queens."

The lace cravats, and ruffles at the bosom and wrists of the preceding time, began to disappear in society, as well as the large button worn on the exterior of the coat-cuffs, or on the upper part of the arm. The club of the hair vanished long before the pig-tail, but both alike required hair-powder on the coat back to the very waist. This was so indispensable a thing, that the fashionable tailor, before he sent home a coat, rubbed it with hair-powder over the back, and made a charge for the powder —sending home with the coat the remainder of the pound or half pound he had procured for the purpose, and charging for it in his bill. It is true, as a first-rate character has remarked, that dress is a very silly thing when men value themselves upon it; but while a man of sense laughs at it, he knows he must not neglect it,

"for there are a thousand foolish customs of this kind which, as they are not criminal, must be complied with, and even cheerfully, by men of sense." This may palliate the adoption of some of the Protean absurdities, which appear so ridiculous before or after they cease to be in vogue.

The foregoing practices in fashion were most of them no doubt existent from the time of Louis XIV., had thus nearly completed their cycle, and an approach was made to something like manliness, from the *petit maîtreship* that had existed before, tainting the manners of the brave and accomplished, as well of the common brainless class of courtiers. Thus the mode described belonging to that period might almost have been pronounced indigenous. Every folly becomes a fashion in a certain sense, though every fashion is not a folly in the usual understanding of the term. Lord Spencer cut off the skirts of his coat, and folly made a fashion of the amputated garment; but fashions in general are not so clear in their origin, though as fully devoid of taste, which, to be really good, can only coëxist with genius; and therefore fashion does not really imply that quality, if once in an age it chance to stumble upon it by accident.

Before the time of the French Revolution, when a native of that country upbraided us with cutting off "the heads of our kings and the tails of our horses," referring to Charles I., and we were enabled to retort, the people of France found in the exigences of those ferocious times that which lifted them above their old frivolity. Dress became a thing of less moment, because they were engrossed with more manly pursuits, and utility rather than the vagaries of fancy occupied their attention. With the female sex the art of pleasing continued in the ascendant—second nature as it is with them—and fashion became and continued as Protean, if not as tasteless, as before. The models supplied by Greek statuary, with some modifications not of much moment, were calculated to display the graces of the female figure to great advantage—fully as much, indeed, as the present dress is formed to disguise that figure, and degrade the inventor's understanding in relation to the principles of taste. It is true that, in private collections of the antique in this country, as well as in those which were public, there were to be found examples enough for copies; but the art of adapting the drapery consistently with modern notions of propriety, and still preserving the contour, was no easy task for the English dressmaker. Our ideas of propriety are of a very inconsistent character; and Swift's saying, that "a nice man is a nasty man," might serve for a note to many of the coynesses we observe regarding the exhibition of the naked figure, or that partially draped. George III., one of the coarsest-speaking men of his time, always made a fuss among the nobility about the Queen and Princesses visiting sculpture galleries.

The necessity of Christianizing antique figures in the matter of dress puzzled the fabricators, and they studied the subject with about as much effect as half a dozen dancing-masters would study the nine difficult points in divinity of the "seraphic doctors," or a knotty question fit only for the professors of the Sorbonne. The hollow truce of 1802 enabled professional dames to acquire something of the French mode once more, both of the past and present — the future being still a sealed book. War cut off all intercourse as before, and again, until the general peace, the fashions became of a neutral character, neither French nor English. When France was beaten into peace again, she vindicated her own superiority; even the mixed mode adopted before the general peace had the merit of being more graceful, less cumbersome, and preferable to those in vogue before the great continental convulsion. At that time every possible effort had been made to disguise nature. Hats of a monstrous size, more like umbrellas, protruded around the head; stays touching the chin, the latter buried in muslin kerchiefs, starched as stiffly as possible; curls of a large size, kept in order with pins, and thickly pomatumed and powdered, had been standard rules in the courts of England and France, in union with other monstrosities at war with the beauty in the outline of the female figure as far as it was possible to make it hostile. The sex appeared ashamed of the resemblance it bore to the beauty of its common mother, as if desirous of making the artificial and tasteless supersede nature altogether. Thus the hair was often cropped to substitute a towering wig with Alpine curls—Pelion upon Ossa. The hair over the forehead was combed back, giving an unbecoming appearance to the front, with an unnatural boldness. The curls papered and pendent

in rows over muslin kerchiefs in the morning, hung down in the evening over the bare shoulders, but the curls on and below the temples lay row above row, like sausages placed horizontally one above another, greasy with pomatum, strong with perfume, and powdered white, or with brown, pink, or gold dust. A cushion was worn on the top of the head, to which the hair was attached, and the toupee frizzled off, and sometimes the beehive-shaped cushion thus surmounting all had bits of drapery attached to it, the lower ends of which were loose, or else fastened to a part of the dress beneath, fluttering like so many flags and streamers. This cushion, sometimes made heavy by the introduction of lead in its fabrication, served as a support to feathers, pearl ornaments, and other nicknackery, like the filigree work on the summits of some Gothic tower. Half of every day of precious time was wasted for weeks together in the fashionable season in merely dressing.

But if the colors of the dresses were strange, and wholly antagonistic to Newton's doctrine of the prism in the natural order, they were as singularly selected and arranged. This natural order of the colors set at defiance new tints, not of the "radiant bow," that made their appearance for variety's sake, of which in these degenerate days it is not easy to imagine the hues or their shades. Most of the names were French. Among them was the "Dauphin's Blush," which old Brantome would have have declared to be a misnomer in the Court of France, and might have been pea-green for all we can decide about it. There was the "*boue de Paris*," or Paris mud, still more extraordinary in appellation — perhaps allied to the old color called "Isabelle." Then there was the "*soupir étouffé*, the *gris de Dariée*, and others, as "iron brown," of which we have no accurate demonstration.

The terms given to female apparel as to stuff or color were taken from passing incidents or political events. There were *d'Artois* or *maccaroni* cloaks, *cavat* caps for morning attire, *gorge de pigeon* lutestring, and *soufflée* gauzes. The maccaroni cloaks were as ugly, unmeaning things, as those since borrowed of the Cossacks, or some other semi-savage race. They were made long, with three or four capes like box-coats, the lowest cut to a point ending in the center of the back. In front there were lapels, such as were worn by men. The fair neck and bosom were covered with muslin, stiffened with gauze much starched. Some ribbons of the time were called *boulets rouges*, from Elliot's use of red-hot balls at Gibraltar. There were the *Carmelite crapaud*, the *yeux d l'Empereur*, and similar names attached to colored cloths or stuffs worn at that time. *Ninon* plumes, *plumes de coq*, Chambery gauzes, Gibraltar fans; goat's-beard muffs, and fox-skin muffs, were terms for different dresses or parts of dresses, or their accompaniments. Cuffs and ruffles were worn half-way down the arm, edged with lace, and straw flowers, mingled with gauze, in caps and hats. Straw was worn in every possible mode. Large hats of chip shaded the face, the crowns covered externally with crinkled gauze. A huge corkscrew curl hung down on each side from beneath the hat, while, in the hat itself, were stuck masses of black or white ostrich feathers, while bunches or knots, or ends of ribbon, descended from the poll or brim, under the general name of "streamers." Stays were worn tight-laced, and so high as nearly to touch the chin, called "Abingdon stays;" the stiff kerchief over which came up as high as the mouth. The whole dress was completed with flowers, frills, and furbelows; high white-heeled shoes on the feet, with large, sparkling, oval buckles, called "Devonshire buckles," composed, altogether, a figure highly grotesque to modern eyes accustomed to more simple habiliments. When the cane or whalebone hoops were abandoned, those of cord were substituted, which afterward died out naturally. When Gallic loyalty perished on the scaffold, its grotesque fashions faded fast away, as before observed, and in a few years their traces altogether disappeared.

Though singular and even ludicrous in modern eyes, the costume was not ill-adapted to the state of the fashionable taste at the time in most other things. When Mrs. Siddons was in the hight of her popularity, George III. might be seen on public occasions in a suit of white velvet, with a rose-colored satin waistcoat answering to his ruddy complexion, somewhat oddly, on the whole, very like a miller. The royal ladies, in huge, towering head-dresses, were like so many priestesses of Cybele, turret-crowned.

They then went to public places as to court in chairs, made high to receive their head-dresses without derangement. Their hoops were turned on one side to enter and sit at all, and the old dowagers, frizzled, powdered, and plumed, looked like exhumed mummies upright in their sycamore coffins. The protruded kerchiefs prevented all access of the hand to the mouth, except by turning the head sideways, and thus, at a party, they could only manage to sip their tea over the shoulder.

That was a day of cosmetics, too, as well as our own. Perhaps they are now only changed in name. They had no Macassar, it is true, that would make hair grow on old shoes, but they had *pommade de graisse* to encourage the capillary growth, used when *en dishabille*, and they adopted *poudre d'Artois* to finish off. They used "Milk of Circassia," and "Balm of Lilies," the paternities, no doubt, of similar cuticular quackeries now under different appellations. Rouge and white were then used extravagantly, but are banished now, unless in the shape of the gentlest touch of carmine possible with a hare's foot upon a pale complexion. More would not do, as anything resembling the healthy flush of a milk-maid is even now abhorrent to fashion; a pale, delicate face, and clear eyes, indicative of consumption, are the fashionable desiderata at present for complexions.

The renewal of the war after the treaty of Amiens, as already remarked, rendered the introduction of the Parisian fashions, in places remote from the metropolis, very slow, compared to the way in which it would now take place. Certain politicians were very averse from the adoption of the French costume under the Consulate, but fashion acknowledged no superior command from the politician, upon whom it has ever looked down with a full consciousness of its own superiority and disregard of party feeling, that essence of modern patriotism. Tight-lacing, the assassin of female loveliness for two or three centuries previously, fell before the modern imitations of the antique. The flowing drapery of the new costume, in the *simplex munditiis* taste, which was innovating so painfully in the vision of the dowagers and ancient ladies, as to make them declaim that the public morals were in danger, was carried in some cases to an extreme. Madam Recamier, the wife of a noted Parisian banker, made her appearance at the court of the First Consul in an underdress which was little other than a chemise, over which was thrown a fine transparent garment of lace or something of the kind, designed to display the elegant contour of her person to the utmost advantage, for her figure was unquestionably beautiful. This drew upon her the reprobation of the hero, who determined that propriety of the most exact character should be maintained where he ruled; and the ambition of the lovely lady was foiled, as it merited to be, when she did not hesitate to place the gratification of her vanity before the sense of decorum, which can never be dispensed with in her sex under any circumstances. This rebuke became the subject of much remark. Some ladies were shocked at Madam Recamier's conduct—particularly the more ancient. Some were curious to know exactly how, and of what substance her dress on that occasion was made, the better formed of the young dressing a little thinner than before. On the whole, the change turned out greatly for the better, the ease and grace of nature gaining considerably upon the grotesque in art which had preceded. The hair was now plainly ornamented with a single flower, the drapery short-waisted and flowing. The beauty of the natural form was better displayed than by waspish waists, Flanders-mare petticoats, or the present crinolines; and a return was made to the costume seen on the monuments in in our old cathedrals, resembling what are humorously denominated "bobbing Joans."

Before the day of Waterloo the French *prestige*, caught at the short peace of Amiens, had gradually blended with English innovation, and produced a costume of a mixed and original character; it was, indeed, unique. Left to itself until the general peace, the fair dames of England, always patriotic, clung to their customary cutters and carvers of silks and satins. It was considered, perhaps, that, speaking figuratively, a sixth order should be added to the fig-leaf art invented in Paradise. The peace hastened the *experimentum crucis*. The sex which, in these islands, in beauty and goodness, yields to none in any other country, began to exhibit their forms in Paris, clad after the taste that had prevailed during England's isolation from the acknowledged focus of all that is excellent in the female garb. The contrast was,

indeed, mortifying. Even French gallantry could not restrain a smile at the singularity of our countrywomen; and on the stage, *Les Anglaises pour rire* raised a laugh at the expense of the fair dames of England, which did not lose from its faithfulness in detail.

The secret was soon disclosed by relatives and countrymen to the objects of it, or to their wives and daughters. They were led to the *Marchande des Modes*, and in a little time the satire lost its sting, and English beauty was generously acknowledged, and its owners duly honored. The change was, indeed, marvelous. British beauty had its triumph, and assumed its ascendency through the carrying out of the task which had been the standard of its trial, and the superiority of which is now acknowledged by friend and foe, just as it had been before the Revolution.

Down to the Revolution of 1830, and the downfall of the Bourbons, the tasteful costume of the antique was no longer considered a model, as it had been before their return. It must be borne in mind, that both in France and England the fashions have been constantly alike, "except as before excepted," to use the language of the law. With the reinstatement of the Bourbons to their fall, the return to the old fashions seemed inevitable, as far as the restored dynasty could with safety accomplish it—even to the restoration of royal kept-misses, Swiss Guards, and all sorts of obsolete ceremonials. Tight-lacing began to divide the fair dames like hour-glasses, into halves. Frills, ruffs, and the rubbish of old cathedral imagery, began to cheer the souls married to the dead past hope, rather than to the living with it. Bishops' sleeves came in to do honor to the miter, and skirt expansion of full longitude swept up the dust and mud of the streets alike, while little bonnets and ample cloaks, touching the ground in the rear, and enlarging downward, gave a lady, viewed from behind, very much the appearance of a candle extinguisher walking abroad for air.

The more ancient costume was always retained at the Court of George III., whose etiquette was as rigid as in the minim Courts of Germany, and the old costume could not be dispensed with. Queen Charlotte, too, clung to German, or, as she used to call them, "Yarman" customs. Birth-night balls were not as numerously attended then as they are now, being destitute of that ease and unnecessary ceremony in which George IV., highly to his good sense, made alterations—ease and grace predominating with a propriety which, under the ceremonials of Dutch and Hanoverian manners, were any thing but consonant with those observed in the Courts of the larger European states. Under the formal mode prevalent in the time of George III., let a ball be supposed about to take place. Minuets were the favorite dances of both the King and Queen. They were the most tedious, wearisome things which can be conceived. Chairs were placed for the King and Queen at one end of the room, generally an oblong square; within was a space previously marked out by ropes, covered with scarlet cloth. Without those ropes, on either hand, were seats for the company, and the space within, in front of the King and Queen, was occupied by the dancers, who, it had been previously arranged, were to figure on the occasion, and sat in a particular place, stiff etiquette governing all. Those of the company only were permitted to dance who had received tickets for the purpose from the Lord Chamberlain—that official on such occasions figuring as a sort of Beau Nash. The dancers must have undergone the ceremony of a presentation at a previous levee if they designed to exhibit upon the occasion. The minuets began at nine o'clock, by which time the company was expected to be seated in exact order of precedence. The band in attendance played "God save the King" as the royal pair entered, conversing at first indifferently with the company for a short time before they took their seats. The dancing began according to the order of precedence, even with brothers and sisters together, and after the order expressed upon the tickets with which they had been provided. The minuet, tedious and stiff as it was, being concluded, the lady who had danced was expected to pay a formal respect to their Majesties. Having done so, she resumed her seat, and her late partner led out a second lady. When these tedious, tasteless minuets were concluded, the country dances began, and while these were proceeding, generally about eleven o'clock, the King and Queen withdrew unnoticed. Seldom more than ten or twelve couple danced, and the whole was over generally a little after twelve o'clock.

The exceeding stiffness and etiquette of these balls, altogether modeled on those of the German Courts—the starchness and parsimony in the palace—contrasted ill with the ease displayed in the entertainments given by the nobility, in which the princes of the reigning family mingled. They were ready to accept invitations where they found more enjoyment; while, on the other hand, the effect was injurious, by the desire to please them becoming extended into invitations from almost all who could expect the honor of making them their guests, some of whom were by no means the most desirable of associates. The Prince of Wales, not as much Germanized as some others of his family, invited to balls, masquerades, concerts, and similar entertainments, entered into them with great zest, and sometimes relaxed in company that would never have been admitted into the royal circle, worthy or unworthy of the honor, as it might happen. At length, the princes sometimes took a part in public scenes inconsistent with decorum. It is a consequence, perhaps, of the influence of power upon limited minds, that monarchs in general, and the house of Hanover in particular, have had no great cordiality with those of their offspring or connections that were next in succession; and, while in sound health and mental straightforwardness, were ever ready to exclaim with King Kenry,

"Dost thou so hunger for my empty chair,
That thou wilt needs invest thee with mine honors,
Before thy hour be ripe?",

whether any occasion existed for it or not. To this George III. was no more an exception than his grandfather. Fashion did not vary the less for the starch etiquette kept up at court. That of the men, however, fluctuated much less than that of the other sex; while, compared in simplicity to the present male habiliments, it was still complex and often tawdry. The hair, when it was real, was curled horizontally upon the temples, and well sustained with pomatum, powdered, no straggling hairs being suffered to disturb the evenness of the poll, which was shaped daily by the hairdresser who attended for the purpose. A stout club hung down the center of the back, generally tied with black ribbon, that, or the pigtail, being the inseparable companion of the blue and buff, with metal buttons. Sometimes the breeches were of greenish cloth, having a sufficient space between them and the boot-top to display about an inch of the fine cotton stocking worn under the boots, the latter held up by leather thongs around the knee. There was another mode of keeping up the boot, which most elderly people must remember, and all who ever followed Pitt in the street. It consisted of a buckle in the back part of the boot-top, connected with a strap from the back of the breeches knee. To Pitt this was needful, for his legs were calveless, but they displayed the stockings as before described.

The hairdresser was then a most important personage, and generally in attendance about breakfast-time. He shaved, he dressed the club, powdered and tied the hair, and related at the same time things which he did and did not know, to vary the monotony of his operation. If the master of the house intended to dine out, the tonsor must come a second time to renew the honors of the head. The lady of the house was, in those days, as dependent as her lord upon the hairdresser; but some had female attendants who could adjust the hair. Still no lady of the *haut ton* would suffer her head to be adjusted by any but a well-known professor—some renowned Truefit of the hour, in full reputation. Sometimes one operator was so much in demand, and it was so needful in the circles of fashion to boast of his skillfulness, that ladies, the day before the court-day, had their heads dressed, and sat up all the night to secure the famous *friseur's* services. On all occasions, in those days, full dress was very carefully regarded. But among men the cocked-hat was at length superseded by the round, though no one before would go to the opera or a dinner-party unless *chapeau bras*, the hat made to flatten for convenience. The white neckcloth was indispensable, as well as silk stockings, shoes, and buckles. Ruffles were worn at the bosom and wrists in full dress, but otherwise discarded. In the last century the coat-buttons were worn uncommonly large. Some were convex, being glazed, with bits of colored glass withinside, which rattled as the wearer moved. What were called Pierrot buttons, and others of cut steel, were worn often upon the cuffs. Brown and pea-green were favorite colors. Straw coats were made to answer to the straw so much used in female habiliments.

Blue and buff were the opposition colors; blue and red were the court colors. A walking-dress, common among staid gentlemen, consisted of a single-breasted coat, breeches of cloth or satin, hose of white silk, or white with longitudinal blue stripes, high shoes, and silver knee and shoe buckles. The latter were large, and their forms were often changed. Shoestrings were censured as revolutionary innovations. A long cane, with a black silk loop and tassel, was common in the hand, often gold-mounted. The Hessian boot only came in at the commencement of the present century.

The dress of the army was kept to the Prussian model long after its boasted system of dress and discipline was shown to be worthless. The convenience of cropping the hair before spoken of, was met by the anti-Gallic prejudices at the head of the army. The allowance of pipeclay, the hard stock, stiff tight dress, and carrot-shaped leather pigtail, flourished in the most approved mode when the inconveniences of the whole might be seen at a glance. The French system was to lighten and disembarrass, the German to stiffen and load. The coats were long-skirted, the gaiters came up to the cloth breeches at the knees, and a cocked-hat crowned all, except with the flank companies, which wore caps. The dress of a regiment in the old costume would now be thought very singular. It is well these things are changed for the better. What the old system cost by its sluggishness of movement and pain, as well as awkwardness in managing the limbs, only those knew who experienced it.

Down to a comparatively late period of the last century, the expense of articles of dress had limited them to a class able to expend no inconsiderable sum upon the person. This expense was at one time an important distinction between different classes of persons. It separated the rich from the poor. But trade and commerce obliterated this distinction by enriching traders as brainless fashion styled those, however honorable, which it had not chosen to enlist in its checkered ranks. Embroidered suits became on the wane even for full dress. The appearance of a nobleman or gentleman now in a suit of *gris de Dariée*, with embroidery down the seams, would only recall to mind a merryandrew, especially when to be well dressed is considered to be so dressed as in no way to call for remark from an observer—the best rule ever dictated for forming a judgment upon the costume of another.

Carmelite-colored velvet, decorated with jewels, would now be thought very much out of the way, and a nobleman in "Emperor's eye" of the old cut, with silver seams, or in pink velvet and silver, would appear "wondrous strange." At the time alluded to, the Prince of Wales dressed with the most prodigal costliness. His mother tamboured waistcoats for him with her own hands. He was sometimes seen dressed in green velvet with silver embroidery, in brown velvet with cut steel buttons, having mottoes engraved upon them, costing three guineas each, or claret-colored velvet over which was laid a net-work of gold thread, breeches of rose-colored satin, and ruffles of Brussels lace. His extravagance in dress was noted and described whenever he appeared in public. Sometimes he wore a coat of balloon satin, silver embroidered. He was closely followed by all the young men of fashion, who vied with each other in imitating even his mode of walking. The ladies sometimes emulated it, and called it the "Prince's Lounge."

The changes in dress which followed those times in public lapsed into half-boots and tight pantaloons, with long blue coats or buff leather breeches, and blue and brown top-boots. Those before mentioned were a long-standing costume, existing in solitary examples down to a comparatively recent period, together with the most attenuated of pigtails. Braces were not in vogue, and four or five inches of the shirt were generally visible above the waistband. The half-boot, before the Hessian was introduced, seldom reached more than half-way up the leg, finishing with a black tassel. The pantaloon was generally knit, and lemon, blue, or black of color. The full dress was carefully adjusted: a blue, green, or claret-colored coat, white waistcoat, and lemon-colored brown or white kerseymere breeches, with silver knee and shoe spring buckles. The stockings were of white silk, a cocked-hat was still in use; and when mourning or profession dictated, black was necessarily worn. Boots were never tolerated at dinner tables. The late Duke of York being engaged to dine with Mrs. Crewe and a party, having been detained, and on arriving not being out of boots, would

not dine with the company, but was served in a room alone, and then joined the gentlemen over their wine when the ladies had retired to the drawing-room. Had he joined before in a morning dress, it would have been considered an act of great rudeness, affording a singular contrast to the disregard of dress at dinner parties now where ladies are present. There is a just medium in all things, but this species of respect to the sex is due, and in no way to be censured.

The above costume in full dress was followed by the pantaloon with silk socks and shoes, and then by the Sarmatian or Dacian trowser, whichever it be, and light boots, as if to afford an opportunity of dressing for the table with the utmost possible expedition. On the whole, save in the slovenly look about loose morning-coats, the present costume is cheap, unpretending, and except the coming booted into the drawing-room, much more rational and manly than that of our youth, when the Opera, Ranelagh, Vauxhall, and the theaters were visited by the noble and wealthy, as well as the other classes, and the brilliancy of the company was equaled by the high order of the entertainment, particularly in the great theaters now forsaken by the noble, educated, and wealthy. The latter can rival the nobility in expense; good breeding with exclusiveness alone remains as a distinction. Mr. Scripp's equipage may rival that of the premier peer, although no one would mistake him for a gentleman, even where he would be tolerated for his wealth, and his want of education overlooked, for gold renders ignorance legitimate, and sanctifies the lowest companionships in the highest quarters.

The *ultimus Romanorum* of his district might be seen now and then, a few years ago, in his leather brogues, brown tops, pigtail, and blue—a modern antique. Even he would slide into the fashion of the present day had he the heart; but that organ is not with the passing hour, but belongs to a parted generation. Still he carries the *morgue* of the old school, with its innate good breeding, which age never changed, nor poverty extinguished. The hotel waiter always discerned the gentleman through the threadbare coat. The superiority of the carriage of one of the class of the olden time can not be questioned, as far as carriage is concerned. Perhaps there was nothing about the old school of fashion really superior to the present; but there was a much greater deference for the fair sex, more gallantry, more attention to minute things, and a suavity of manners inculcated or produced by these in combination. Mentally it was coarse and even vulgar in its pleasures and amusements, ill-judging, narrow-minded and unlearned, except in verb and noun-book Latin and Greek. Some were hard swearers, riders, and pottle-deep drinkers; bull-baiters, dog and cock-fighters, and pugilists, after Mr. William Windham's own heart. They were up to the chin in prejudices, yet the good were very good. They were hospitable, generally kind to inferiors, and did not venture to presume in any way, especially as independent actors or thinkers, and they were not given to wounding the feelings of others. Such were the race, a very few of whom may be recognized yet by their leather integuments and a deficiency in the study of *Locke on the Understanding*, when entering into an argument. They must all in a short time be numbered with Cuvier's races of the Mastodon Megatherion, and other extinct objects in animal history. None of this genus were of the Chesterfield school of gentlemen. Thus, for example, they would not have ruled Ireland as he did, but have used the *fortiter in re* alone. They would most of them have prescribed religion in the way of a political receipt, in place of letting men believe what they saw fit; and they had a rooted dislike to foreigners, more especially to Frenchmen.

The traces of the old school in England began rapidly to diminish between 1820 and 1830. By the latter year it was the same in France, accelerated by the Revolution of that period. On the return of Louis XVIII., a host of emigrants and adherents of his family had returned at the same time, but, in imitation of the old court, retained the costume of the departed era, as well as the manners; but France had changed, and they could not see and adapt themselves to it. The old dress was a part of loyalty under the restored *regime*. At seven in the morning in 1816 and subsequently, might be seen elderly and aged men in the dress of the court and people of the years '89 or '90—buckles in their shoes, stockings white, the coat of the old cut, pigtail, powder, ruffled wrists, and sometimes a nosegay and the cross of St. Louis in the button-

hole—on the way to prayers. They were the leather broguemen of France — the living representatives of a dead age. An odd figure they cut by the side of the military men and citizens who had sprung up while they had expatriated themselves, and imagined that the changes and battles of twenty-five years had not altered the pictures of the past inscribed on the tablet of memory. In England the natural course of time had made the men and fashions of which we speak obsolete. In France—but the memory of the reader will fill up the hiatus with the astounding events which have been so long before the world. This by way of episode.

To return to the previous subject. Dress was a study in those days for small intellects. The man of title who designed a new coat, collar, or a fan-tail skirt—a new cut one—was noted in the fashionable papers as a genius. The Prince of Wales expended much time in audiences to his tailors, almost diurnally; and he is said to have been the inventor of numerous shapes and patterns. Yet he would sometimes wear a favorite article of dress, and have it patched once or twice before he would leave it off, his wardrobe being at the same time crammed with innumerable duplicates of a similar kind, brannew.

The vagaries of fashion have their cycles. In this respect the modern do not differ from the past times. Persons in years see the fashions of their youth come round again. Fashion finds relief from a lack of fresh invention in a sort of planetary rotation. The acme of the mode today changes into a vulgarity to-morrow; and remaining for a time in abeyance, becomes once more the favored of the hour, the supreme *par excellence*, until it is a second time buried, to undergo a third exhumation at a remote day.

To describe and contrast the present fashions with the past would be superfluous, as the observer can do it for himself, having the past sketched out before him. The present, as regards the full or undress of the men, is simple, and in some respects slovenly in both cases, but it is unpretending. That of the ladies, no language we can command is capable of sufficiently discommending. If the study to disguise and degrade female form and loveliness had been prolonged for an age, it could not have been more successful to that end.

As the fashions changed in dress, so they fluctuated in equipages. We can just remember when a country gentleman or two, of fortune, drove a coach and six, but that is very long ago. Four are a sufficient superfluity at county meetings. The carriage was far more showy and complicated in those days, exhibiting less of good taste, and an inferiority in workmanship. Carriages were often fanciful in form, in consonance with the caprice of the owners, guided by no rule but eccentricity of appearance. Everybody who remembers the equipage of Romeo Coates, at a later time, can readily understand how carriage-building might be varied without the representations of chanticleer in bright metal, which covered his vehicle and harness, at which the boys in the street used to crow like cocks.

Hatchet, of Long Acre, was in those days the principal carriage-builder, and greatly improved the vehicles he constructed. The older carriages were for the most part lumbering vehicles, after the German model. Hatchet invented one carriage which was called a Tim Whiskey, and went upon three wheels. The chairs for going to court and evening parties, used by ladies, were lined with red morocco leather, and often decorated externally with very fantastical ornaments in silver.

The intermediate vehicles between the chair and coach were numerous, all are of later years, now superseded by lighter conveyances, plainer, and of better fabric. The *vis-à-vis* for two persons facing each other, was used to attend at court or at dinner parties in full dress. It was in general superbly decorated, and drawn by horses richly caparisoned, with a couple of footmen behind, sometimes more, and in rich liveries. This is now obsolete, the vulgar brougham replacing that carriage, and indeed becoming the substitute for larger carriages for the sake of economy, with a single horse tugging a whole family to a dinner party, which, had the old head-dresses and wigs been still worn, would not have been possible.

The lofty phaëton, high enough to look into a first-floor window, and well calculated to break its owner's neck, has no counterpart now. Some were called from their make "arch-bottomed," and many had silver panels. Those low vehicles which bear the name now, at donkey-stands and watering-places, have not the

remotest resemblance to them. Their wheels were large, and their movement stately, four horses being generally harnessed in them. George IV. was as conspicuous for his carriage fancies as for his painstaking in coat-cutting. He rode at one time in a carriage surmounted with a crown and plume of feathers waving over it. The angles consisted of fluted pillars of a rich gold color, the inside was lined with velvet and gold. Some of the carriages of that day had the bodies fancifully painted with aërial spirits, emulating, with expanded wings, the speed of the horses that drew them. Some exhibited fat Cupids amid pastoral scenes, with shepherds. Emblems of victory, graces, and loves, were displayed upon the panels of many, allegorical to incomprehension. Mother-of-pearl was resplendent on the bodies of others, and deep purple spotted with silver, surmounted with foliage or mosaic work, generally straw-colored, adorned others. The Prince of Wales used to go down to Brighton in a carriage with three horses, tandem fashion, the foremost ridden by a postilion, the others driven by himself. It was subsequently that the graceful and compact curricle came into use, its handsome mountings, and pair of light horses, with a couple of mounted attendants, on the whole, the handsomest equipage for two persons ever displayed in park or road. The mounted attendants would now be deemed an outrage upon economy. Afterward arose the passion for driving four-in-hand, that subsequently degenerated into a coach-driving mania, not yet extinct. Other vehicular follies had their day, and have gone out of vogue. The turn of the present time toward the useful, in place of the superfluous, is a mark of the good sense of a more advanced era. Here, too, the wealth of the *parvenue* galls the kibe of the starch patrician. A blending is inevitable, the pride of feudality sympathizes and fades with the reign of ignorance. The scientific railroad leaves the deserted sluggish turnpike to the pedestrian, and as with the embroidered coat, already observed, the unsustainable pretension becomes valueless. Formerly it was the fashion to be prodigal of expense, where at present even a peer will drive a hard bargain. The old extravagances of the English traveling upon the continent were proverbial. A change to the other extreme has come upon them. The liberal, tasteful, and showy, are placed below their level. A paoli in Italy, or a kreutzer in Germany, or a shilling at home, are now matters of dispute with noble or plebeian. We are become rather too much colored with trading parsimony. Rank now has its money instruments, and dreams of profits. They who meddle with the shop are certain to become infected with its spirit. It will sully the most patrician fingers as certainly as his who only discounts paper at ten per cent, till at length generosity is treated as a scarecrow, through its antipathy to the spirit of accumulation. R.

From the London Quarterly.

THE MERRIMAC AND THE MONITOR.*

The civil war now raging in America seems destined to furnish Europe with a series of surprises which defy the calculations of our most sagacious politicians, and at first sight appear to set at naught all the experience hitherto gained in the wars on this side of the Atlantic.

The war itself, not only in its origin but in its duration, has been of a nature that no one anticipated; and even at this moment the most experienced statesmen are

* *Shot-proof Gun-Shields as adapted to Iron-Cased Ships for National Defense.* By Captain Cowper Phipps Coles, R. N. London. 1861.

Second Report of the Royal Commissioners on the National Denfenses. London.

What is good Iron, and how is it to be got? By R. H. Cheney. London. 1862.

as unable to predict when or how it may end as they were to foresee its commencement. The siege, if it may be so called, of Fort Sumter, which was the first event of the war, is unlike any thing that is known to have occurred in Europe. We have no record of a powerful casemated fort in the sea being forced to surrender to the attacks of batteries situated on the shore before a breach was made or a single gun dismounted; and what is more wonderful still, before a single man was killed or even wounded on the side either of the attack or the defense. The battle of Bull Run, which was the next great event, is equally without a parallel in the annals of European warfare; and so, too, is the duel recently fought between the two iron-plated vessels at the mouth of the James River. This duel was, so far as we know, almost as bloodless as the siege of Fort Sumter, and, if not so momentous in its political consequences, it is yet well worthy of the most attentive consideration of all persons interested in military matters. We could afford to smile at the siege of Fort Sumter, and did not think that any knowledge was gained through that event, as to the advantage of defensive works. The battle of Bull Run was looked upon as so exceptional that no one attempted to draw any military conclusion from its phenomena. But the action between the "Merrimac" and the "Monitor" has aroused the attention of Englishmen almost as much as the "affair of the Trent;" and the fight has been discussed both in Parliament and out of doors, with a degree of interest and an amount of excitement scarcely surpassed by the announcement of the seizure of the Confederate envoys from under the protection of the British flag.

The difference, however, in the manner in which the two controversies have been conducted is striking in the extreme. There are few Englishmen who are not capable of forming a sound judgement, when they give themselves the trouble of thinking, regarding a point in which the national honor is concerned; and the unanimity and good sense shown by the whole people on the first occasion was as striking as it was honorable and creditable to us a nation. Unfortunately, however, there are very few persons who have the special knowledge which is requisite to draw any satisfactory conclusions from an unusual and complicated military event, or who are competent to give an opinion on the recent experiment of a fight between two iron-plated vessels. The consequence is that a panic had seized the public mind. Every thing is considered as known, every thing as settled, by this one action. Both in Parliament and outside, the most violent opinions have been asserted in the most dogmatic manner, and Ministers have been forced by the clamor to give way against their conviction on matters nearly concerning the interests and the safety of the country. Had Parliament not been sitting at the moment, had more time been allowed for reflection, or for obtaining more accurate information, the result would probably have been different; but while things are in this position, it may be well worth while to examine the details of the fight in Hampton Roads a little more closely than has hitherto been done, and to see if any modicum of real knowledge can be extracted from the vague and scanty intelligence which has yet reached us.

The first vessel that took a part in this memorable action was the Merrimac—since called the Virginia—originally one of six first-class wooden frigates, built by the Americans in or about the year 1855. The Minnesota and the Roanoke, which also appeared on the scene of action, are sister vessels; their tonnage ranging between thirty-four hundred and thirty-six hundred tons, and equal to that of a first-rate line-of-battle ship. (The tonnage of our Duke of Wellington, one hundred and thirty guns, is only thirty-seven hundred and seventy-six tons.) They were all screw steamers of the most improved class, and it was to match them that our Orlandos and Merseys, and other vessels of that description, were constructed. The Merrimac was sunk and supposed to be destroyed by the Federal officers, when the Confederates took possession of the naval yard at Norfolk. She was, however, afterward raised and converted into an iron-plated vessel of the most formidable description for inland defense. So far as can be made out from the very imperfect descriptions which have reached this country, it seems that her top sides and upper deck were entirely removed flush with the gun-deck, and for these a casing of iron was substituted, sloping inward at an angle of forty-five degrees. This coating must consequently have extended some feet beyond the original sides of the ship at the water-line, to

which it was carried, on the assumption that she floated to her original depth. Upward it extended to the level of the original upper-deck, which was considerably narrowed, and was also covered with thin plates of iron. The weight of all this additional armor being considerably in excess of the portions removed, and for which it was substituted, seems to have lowered her line of flotation, as was intended, some three or four feet, so that her armor extended to that distance below the water-line; but her port-sills were also brought so low as to render it extremely doubtful how she would behave in the open sea, or with any swell on.

Her armament consisted of twelve guns, so disposed that four or five of them were broadside-guns on each side, and either two or one facing forward and aft in the direction of the keel. The accounts are not quite clear on this point, which is in fact of very little consequence. The broadside guns were eleven-inch Dahlgrens; the fore and aft guns seem to have been rifled, though on what system is by no means clear.

In addition to these she was fitted with two prongs or rostra, projecting from the bow, it is said, like plowshares. These were intended to run into and pierce any vessel she might be engaged with; and from the use made of them, they appear to have been as much or more depended on by her officers than even the armament detailed above.

Thus fitted and equipped, the Merrimac left her moorings at eleven o'clock on the eighth of March last, and steamed down the James River to Hampton Roads, at the entrance of the Chesapeake Bay. Here she found two frigates belonging to the Federal navy, lying at anchor—the Cumberland, a sloop of twenty-four guns and seventeen hundred and twenty-six tons, built in 1842, and the Congress, by some said to be the old Congress of our war with the United States, by others to have been built in 1841—at all events bearing fifty guns, though only eighteen hundred and sixty-seven tons burden. Both were sailing vessels, and, as may be supposed from these particulars, neither of the first class, and the guns of the Congress at least must have been of very small caliber to enable so small a vessel to carry so many of them.

On approaching the Federal squadron, the Merrimac seems to have singled out the Cumberland for her first victim, and, after firing once or twice into her from her bow guns, ran straight at her, and "gave her the stem" immediately abreast of the foremast. She then rounded off, firing shell from her broadside-guns into her adversary; and, having gained a sufficient offing, again ran into her right amidships; on both occasions making such holes in her sides below the water-line as to insure her destruction, even without the assistance of the shells, which seem, however, to have spread havoc and destruction wherever they struck the vessel.

While thus engaged with the Cumberland, the Merrimac seems also to have fired occasional shot and shell into the Congress; and having completed the destruction of the former vessel, she turned her serious attention to her consort. A few rounds, however, and the example of what she had just witnessed, convinced the latter that resistance was hopeless, and she hauled down her flag and surrendered—not one moment too soon—as a very few minutes more would have sufficed for her entire destruction from the shells of the Merrimac, without the necessity of any attempt to run into her.

Having destroyed these two vessels, the Merrimac seems to have amused herself for some time in playing at long bowls with the shore batteries, and neglected her opportunity of destroying the Minnesota, which she could easily have done, as the latter had run aground in coming to the assistance of her consorts, and lay at the mercy of the shells of the Merrimac, though of course out of reach of her prow, which at that time the officers seem to have considered their most powerful weapon of offense.

As night approached, the Merrimac retired, either to refit or replenish her ammunition; feeling no doubt perfectly secure, from the experience of the day, that the rest of the Federal squadron would fall an easy prey on the morrow. Most fortunately, however, for the honor of the Federal flag, a new competitor had appeared on the scene of action before the day dawned, in the form of the now celebrated Monitor; which was able not only to check the Merrimac's career of victory, but almost to turn the tables against her.

According to the accounts we have received, the Monitor is a vessel one hundred and seventy-two feet long over all,

and forty-one feet four inches in extreme breadth. Internally she is a complete iron vessel, composed of plates of half an inch in thickness. Over this, to the depth of some three feet below the water-level, is a coating of twenty-six inches of oak, and over this again a five-inch rolled plate of iron. The composition of her sides seems consequently to be almost identical with that of the Warrior, the weight of iron being nearly the same, though with a slight difference in the mode in which it is disposed, but with eight inches more wood: these, however, seem an unnecessary incumbrance. Her deck is planked with seven inches of timber, over which is one inch of iron, and she floats with her deck only two feet above the water; and may be more appropriately called a raft or a barge than a ship—it being evident that she could hardly live in a sea-way.

The great peculiarity, however, of her structure, is the tower or turret, which rises above the deck in the center. This is described as in appearance like a small gasometer. Its external diameter is twenty-one feet six inches,* its hight nine feet, and it is composed of eight thicknesses of one-inch plates of rolled iron. It stands on a turn-table, which is moved by steam-power between decks, and is armed with two Dahlgren guns, placed side by side, and firing through two narrow port-holes in the side of the tower. These are further protected by shields and pendulums, intended to prevent the entrance of the enemy's projectiles when the guns are withdrawn.

No sooner had the Merrimac appeared on the scene of action on the following morning, than the gallant little Monitor proceeded to encounter her, and for five hours the combat raged between these two strange-looking antagonists. During the course of it the Merrimac endeavored to run down or pierce the sides of the Monitor, but, so far as we now know, with singularly little success, having injured herself in the attempt much more than she did her enemy. She also tried boarding, but equally in vain. Every opening was closed with iron gratings, and no hole left for the boarders to enter; while the tower could be turned round so as to sweep the deck either way.

Foiled in these attempts, the vessels contented themselves with a cannonade, which appears to have been almost as innocuous on either hand as the celebrated fight that caused the surrender of Fort Sumter. Toward evening the action ceased, and both vessels withdrew, each satisfied of the impregnability of the other. During its continuance, however, the Merrimac had fired occasional shots at the shore batteries, or at the Minnesota.

What suprises us most in this, as in every other action of this great war, is the want of dash and energy shown by the commanders on either side. Why did not the Merrimac, when she found she was invulnerable, and that the Monitor could do her no damage, turn at once to the Minnesota or St. Lawrence, and destroy them with her shells? or why did she not at once steam up the Potomac, break down the Long Bridge, throw her shells into the capital on the one hand, and the Federal camp on the other? Such an action might have had some influence on the fate of the war, and here was a golden opportunity that may not soon occur again. Why, on the other hand, did not the invulnerable Monitor try the same thing at Richmond? Up to the date of the latest accounts neither has attempted any thing further; so, while the combatants are reposing on their laurels and recovering their breath, let us try what crumbs of information we can gather from the late action of Newport News.

The experience gained from this most remarkable encounter may be conveniently examined under four separate heads:

1. As regards the use of iron-plated vessels as rams.
2. As to the effect of horizontal shell-firing against wooden ships.
3. As to the experience gained from an action between two iron-coated men-of-war; and
4. As regards the probable results of an action between an iron-plated vessel and a fort; the latter being the point on which it has been considered as decisive in this country, though, strangely enough, it is the only point of the four in which the action affords us no direct information whatever.

With regard to the first branch of the

* If only breech-loading guns were used, a much smaller turret would suffice; but one immense advantage of the "Ericsson turret" over the "Coles shield" is, that it admits of the use of muzzle loading guns, which the other does not.

subject, the result, so far as it goes, seems to be adverse to the idea of using iron-plated vessels as rams. It did not require this action to tell us that the bilge is the weakest — the stem the strongest part of any vessel; and that if any ship of thirty-five hundred tons caught one less than half her size at anchor, and chose to run full tilt at her side, she would certainly drive it in and sink her.

Unfortunately, we have already too much experience of this sort. In our own river Thames, even little penny steamers have an unpleasant knack of running their noses against sailing vessels twice or three times their size, and with the uniform result of piercing their sides. The only unexpected feature is that the attacking vessel not only receives no injury in her prow, but that neither her engines nor any part of her moving-gear are deranged by the shock. It is extremely probable that if any wooden screw line-of-battle ship or frigate ran full tilt against the side of another vessel of equal, or even of superior weight and power, she would sink her. This, however, is a point on which naval men are by no means agreed; but, supposing it granted, it by no means follows that the addition of an iron beak gives to an iron vessel an additional advantage at all in proportion to the immense increase of strength which is certainly gained by the iron plating and stronger construction of that class of war-ships, and it is consequently by no means clear that they will be successful as rams. What the present experiment teaches us —if it teaches any thing—is that when one iron vessel especially fitted for the purpose tried to run down another of about half her size, she failed signally, and did herself more injury than she did to her adversary. After all, however, the question is probably an idle one. We can hardly fancy the circumstances in which a steamer, unless disabled, should allow herself to be run into in this manner. Putting the helm up or down—forging ahead, or backing astern — any movement would prevent it, so it is scarcely likely to occur as between iron steamships in action. As against wooden ships it is useless, for it can not now be denied that horizontal shell-firing has sealed the doom of wooden ships of war, and our second head of inquiry is thus finally disposed of.

Those who have had opportunities of following the progress made in this branch of artillery practice since the Russian war have long been absolutely convinced that it only required one naval action to settle the question forever. In the two hundred and sixteenth number of this Journal, (October, 1860,) an article appeared describing the various means of destruction which had been invented for this purpose, and pointing out the utter impossibility of using wooden vessels for fighting in the present state of naval science. To use the emphatic expression of Sir John Hay, in speaking in his place in Parliament on this subject, "the man who goes into action in a wooden vessel is a fool, and the man that sends him there a villain."

Although all this was perfectly well known to the initiated long ago, the advantage gained through the American action is incalculable. The public now believe what before was accepted only by men of science. Notwithstanding all that wonderful tenacity of faith in the ancient ways which is characteristic of a British Admiralty, their wooden idols must now at last be abandoned. Although it is reported that the dock-yard authorities have bought and converted more timber during the last financial year than they ever did before, they too must be sacrificed. The public now know that a wooden man-of-war is a mere box of lucifer matches, and that the first shell fired into it explodes the whole. The question has passed from the region of theory into the domain of fact, and woe to those who refuse to be taught by such experience. But it is needless to reiterate what was said a year and a half ago as clearly and as strongly as it could now be put.

We now come to the third branch of the inquiry, and we feel that we should require to know more than we yet do of the construction of the two vessels engaged, before it would be justifiable to hazard any very positive opinion on the subject. It appears, however, tolerably certain that the Monitor's turret was formed of eight thicknesses of one-inch iron plates. Now, it happens that a target has recently been tested at Shoeburyness, composed in nearly the same manner, but rather thicker, and having the additional advantage of a two-inch plate on the outside. It was made in the very best manner, and of the very best materials. At two hundred yards, the sixty-eight-pound

solid shot and one-hundred-pound Armstrong both pierced it every time; and though the shot themselves did not go actually through, they sent such a shower of splinters into the sea beyond, as would certainly have killed every man who had happened to be inside a tower protected by so frail a covering.

Whence, then, arises this difference between our experiments and those of the Americans? Is it that their iron is superior to ours, or their workmanship better? There is not a shadow of a reason for suspecting either the one or the other. On the contrary, the iron for our targets has always been selected with the utmost care, and the workmanship the best that the skill of this country can produce. Nor does there seem be any thing in the shape of the turret to account for the difference in its resisting power.*

If, therefore, neither the material, nor the workmanship, nor the form will account for the immense difference between the results of the American experience and ours, it is probable that the solution must be sought in the nature of the artillery employed.

The heaviest guns of the Merrimac were apparently eleven-inch Dahlgrens. These are practically shell-guns, like our ten-inch guns; and though solid shot may be fired out of them, this can not be done without danger, and can only be with very reduced charges. If the Merrimac only fired shells, or if is true, as the Duke of Somerset stated in the House of Lords, a few nights ago, that the initial velocity of her projectiles was only seven hundred feet in a second, the whole mystery is cleared up. We know perfectly well, and knew long ago, that an eleven-inch shell fired with so small an initial velocity would barely make an indentation on such a target, and that even a one-hundred-and-eighty-pound solid shot fired with reduced charges would hardly do more damage; but we also know that at two hundred yards a sixty-eight-pounder solid shot, fired with an initial velocity of sixteen hundred feet a second, would pierce it, and at shorter ranges go clean through it.*

We know so little of the composition of the Merrimac's sides, that it is perhaps even more difficult to speak with certainty regarding her. But knowing what her tonnage and displacement were, and admitting that she is now sunk three or four feet below her proper load-water-line, we can calculate approximately what weight of armor she could carry; and if we spread this over her, we arrive at the conclusion that her armor was not heavier than what we are in the habit of experimenting upon. Nor will the sloping position in which it was placed suffice to solve the difficulty. On this point our experiments have been too numerous and too conclusive to admit of any doubt. It was stated the other day by Sir John Hay, the Chairman of the Iron-Plate Committee, at the meeting of the Institute of Naval Architects, that the result was pretty much the same whether a given weight of metal was placed perpendicularly to the line of impact, or whether it was spread out into a thinner plate to cover the same vertical hight as would be required for that purpose, if placed sloping at any given angle. In fact, there seems no possible solution of the mystery from the data at our command, except the one suggested

* If there is any thing to account for the difference, and if it is possible to render such a tower invulnerable, it is most fortunate that the Government has not proceeded further with Captain Coles's cupolas. A perpendicular tower is not only more roomy and capable of far better ventilation, but it occupies far less room on the deck, and avoids the great difficulty and expense of Captain Coles's proposal, which consist in its junction with the deck, and the protection of its lower edges. If, therefore, it is possible to protect this tower, even at the expense of coating it with four-and-a-half-inch plates on the outside, or five or six thicknesses of inch plates internally, it will be found as great an improvement as the sloping sided shield advocated by Captain Coles—but which was suggested to him by Mr. Scott Russell—is over the curvilinear cupola, which is the only invention Captain Coles can really lay claim to, but which never was and never could be carried into effect. One of the many objections to Captain Coles's system is that only breech-loading guns can be used in his cupolas, and the largest class of guns can not be made breech-loaders; so that a cupola-ship may any day find herself over-matched by a vessel of a much smaller and less expensive class.

* A curious illustration of the loss of power from reduced velocity is seen from an experiment frequently tried at Shoeburyness. A one-hundred-pound shot is fired from an Armstrong gun at a target with the usual charge of powder, say fourteen pounds. The next round a two-hundred-pound shot is substituted, but with ten pounds of powder. Although the velocity is not, of course, reduced nearly a half by this process, it is found that the effect of the larger shot fired with the reduced charge is contemptible in comparison to that of the smaller shot with the larger charge, and that the former is, in fact, of no use as against a well made iron target.

in the previous paragraphs, that the Monitor fired nothing but shells, or fired shot at such low velocities as to be comparaly innocuous. If she fired solid shot at such velocities as are usual in our service, either the Merrimac's sides must have been stronger than any thing yet constructed on this side of the Atlantic, or all our science is naught, and we have learned nothing from the numerous costly experiments we have hitherto made.

The fight in Hampton Roads proves nothing directly with reference to the fourth branch of our inquiry, inasmuch as we do not know of any single shot from the shore-batteries having struck the Merrimac; and if any shot from that vessel struck the forts, we are not told what effect it produced. As a contest, therefore, between guns on shore and guns afloat, the action might as well not have been fought. It seems, however, to be inferred that because these iron-plated vessels can not be injured by shot from other vessels, therefore they can not be injured by shot from forts.

Before jumping so rapidly to this conclusion, it would be well to bear in mind, that if the American fight proves any thing, it proves too much. If forts can not stop iron-plated ships, no more can other vessels of like nature. If, for instance, we had an iron-plated Merrimac of 3000 or 4000 tons, armed with the heaviest ordnance, and lying at Spithead, and a little 2-gun Moniteur were any morning to pay us a visit from Cherbourg, what is there to prevent her steering straight into Portsmouth harbor and burning and destroying every thing she finds there? It is certainly not the iron-plated frigate that can stop her; and if we are to accept the experience of the American action as final, it would be as strictly logical to argue, that if we had fifty of such iron-plated ships in the Channel, we could not prevent a single turreted gunboat from entering either Portmouth or Plymouth harbor, or from running into the Thames or Mersey, and burning and destroying every thing within reach of her shells. If this really were so, England's doom is sealed; and we had very much better, like Captain Crocker's coon, "come down" at once. The truth, however, seems to be, that the fight between the two iron-plated vessels in Hampton Roads really proves nothing—taking the facts as they were understood to be when the matter was discussed in Parliament—except that the Americans have discovered the art of fighting bloodless battles. First at Fort Sumter, then at Newport News, the firing is continued hour after hour with a fury almost unknown on this side of the Atlantic—an immense quantity of ammunition is expended; the noise and confusion are such that heaven and earth seem coming together from the exertions of these Titans; and when the smoke clears away we are delighted to find the result is merely what we used to witness with such pleasure at the Princess's Theater, when under the management of Charles Kean. In the first instance nobody was hurt; in the second, the captain caught a cold in his eye from the wind of a passing ball; and the crew were half-suffocated, the actors are, or ought to be, from the smoke they themselves had been making! We do not say that this is a perfectly accurate representation of the state of the case: more recently we have read in the newspapers an account of the death of Commodore Buchanan, the commander of the Merrimac, after undergoing amputation of the leg. What further reports of injury to the crew or to the ship may be in store for us, we can not yet tell; but it seems clear that, from whatever cause, the Merrimac has been in no hurry to resume her operations.

But the action, as we have sketched it above, is the action which in the British Senate, it is assumed, will revolutionize the art of war and change the destiny of nations. Both on the thirty-first March and on the fourth April member after member rose and spoke, and, with no more knowledge of the subject than could be crammed into him by a pertinacious projector like Captain Cowper Coles, denounced all forts as useless. With a unanimity seldom witnessed, the House shouted for gun-boats and cupolas; and so great was the excitement, that Parliament was quite prepared to assume the responsibility of superseding the functions of the executive, and actually did force the Ministers, against their own earnest protest, to suspend the execution of the permanent works, regardless of the money they were wasting, and, what is worse, of the precious time that is thus sacrificed. When the spasmodic energy has passed away, and Members have time to reflect on what they have done, all this will no doubt be repaired as far as may be; for it seems im-

possible to doubt that if we are to maintain our superiority in the Channel, it must be by providing securely fortified harbors of refuge for our fleet, and this can only be done either by building permanent fortifications for their defense, or by maintaining such a fleet of iron-cased vessels for purely defensive purposes, as would, when added to the expense of the sea-going fleet, ruin the richest nation in the world in a very few years.

Turning to our own experiments, all the conditions of which are known to us, while we really hardly know one of the conditions of the American experiment with sufficient exactness to draw a trustworthy conclusion from it, we find that almost up to the present moment the elements of defense and of attack were as nearly balanced as possible. For instance, the Warrior target, which is the best and strongest that has yet been devised, though it was not pierced at 200 yards by the 68-pounder or 100-pounder Armstrong used against it, was very seriously injured; and if the artillery had been a little more powerful, or had been placed nearer, it can not be doubted that the attack would have carried the day against this as it had against every other target that had yet been tried. But, assuming them as hitherto equal, the conditions are already changed. There is now at Shoeburyness a 300-pounder Armstrong gun, which has not yet been rifled, but which is used as a smooth-bore, firing a solid spherical shot of 156 lbs. weight. With a charge of 40 lbs. of powder, this leaves the gun with a velocity of 1720 feet per second; and at 200 yards its force of impact is as nearly as possible three times that of a 68-pounder at the same range. This gun has how been tried against a Warrior target, and with 50 lbs. of powder sent its 156 lb. spherical balls through that target, punching a clean circular hole, very little larger than the diameter of the ball. With 40 lbs. of powder it smashed the plates and broke in the sides, doing more real damage than with the larger charge. When this gun is rifled it will throw a bolt of 300 lbs. weight; and although at ranges under 500 yards this will not have a force greatly in excess of that of the 156-pounder, it will at all ranges above that maintain an immense superiority over the smooth-bore; and we may safely assert that at ranges between 1000 and 2000 yards it would pierce any thing that has yet been fabricated of wood and iron. But why should artillery stop there? If guns can be made carrying 300-lb. balls, they can be made to carry them of 600 lbs. Sir William Armstrong is prepared to make guns of that size; and is only waiting for the order to commence the work, having made all the calculations and prepared all the drawings, and having not the least possible doubt of perfect success in making a gun of at least this caliber; while the Americans talk of 1000-pounders with more show of practical sense than is to be found in most of their schemes.

There seems to be no limit to the extent to which the powers of artillery may be increased; but, on the other hand, we seem very near the limit of the strength of armor which ships can carry. Neither the Warrior nor the Defense class can support the weight of their plating over their whole body; some of the new vessels will be made to do so, but it will be at a considerable sacrifice of other qualities; and consequently the limits within which the weight can be increased are very narrow indeed. Upon another very important question, namely, how far the composition of the armor-plates can be improved, we must refer our readers to the valuable and seasonable pamphlet by Mr. Cheney, *What is Good Iron?** But it does not seem to us probable that upon the composition of the best armor-plates now known, any improvement is likely to be made which will affect the controversy. If bad iron be used, some great national disaster must inevitably ensue.

In this condition of matters it may be

* "If, a quarter of a century ago," says Mr. Cheney, "a political economist had been asked to name the conditions most favorable to the security and prosperity of the country, he could have devised nothing more promising than that supremacy in commerce and in war should be made dependent on superiority in the manufacture of iron; that iron should be the armor of our navy, and the material of our commercial marine—perhaps, too, the coating of our fortifications. Such conditions have been realized; but instead of the energy imparted by knowledge and experience, instead of the alacrity of anticipated triumph, they find among us error and bewilderment. Instead of pouring into our docks and arsenals a steady supply of impenetrable ship and armor-plates, we are disputing about what is good iron, and are struggling to use what is not. Nevertheless, the impulsion is given—ill or well the movement will go on—our wooden walls are rapidly transforming themselves into iron. The cost will be enormous. It depends on the direction for good or for ill now given to the iron manufacture whether the expenditure be not made in vain."

safely asserted that if the forts proposed by the Commission on National Defenses were erected at Spithead, and each were armed with three or four 300-lb. or 600-lb. rifled Armstrong guns, there is no spot where any ship could take up a position to bombard the dock-yard without the certainty of her being destroyed. It is no doubt admitted by the Report of the Commission that a ship might run past the forts without receiving damage. It is probable she might: but it should always be added, that if she runs past the forts, she also runs past the dock-yard; and, as far as any damage she could do to it, might as well have staid in the middle of the Channel.*

The National Defense Commissioners seem to have recommended in their Report the employment of stationary in preference to floating defenses to as great an extent as possible, because they found that the expense of a gun in a floating battery,† moved by steam-power, is nearly four times as great as that of a gun in a fort; because the repairs of a fort when once built are practically nothing, those of a steamship continuous and enormous; and because they believed that it would always be much easier and cheaper to find men to fight guns in a stationary fort than to handle them in a floating-battery in action.

They seem also to have been struck with the fact that we know the exact form of a fort which will be serviceable now and for all future time; while we do not know the form of any kind of floating defense which may not be superseded within the next twelve months. If we were to-morrow to set about building a hundred "Monitors" or "Merrimacs" or even "Warriors" or cupola-ships, the progress of discovery in this respect is so rapid, that before they are completed we may find out that we have again to undertake the rather expensive process of "reconstructing the Navy," and may have to repeat that operation every ten years. If, indeed, the "Merrimac" and the "Monitor" are as perfect as they are assumed to be, both the "Warrior" and the cupola pattern of ship are already superseded. It is satisfactory to think that at all events no money has yet been wasted in this last class of vessels, and there is time to adopt Captain Ericsson's invention if it should be proved as superior to Captain Coles's as it is suspected to be.

But the great fact is that there is no limit to the weight of armor which a fort will carry, or to the size of the guns that can be maneuvered on their steady platforms; while the weight of armor and of artillery which ships can carry, seems already to be very nearly reached. It may also be added that the new invention of rifling ordnance is of very questionable advantage on board ship, owing to the unstable platform from which they must be used. It requires the fixed, steady floor of a fort to enable the guns to be used with that precision which is their peculiar advantage. None of these advantages of forts have been in the smallest degree affected by the result of the American duel; and, so far as our knowledge at present extends, there seems no reason to depart from them.

It is surely unworthy of a great nation like this to say, "We must stop the forts, because we want the money for ships." If either or both are necessary for the national safety, surely the money can be easily found. At all events let the question be argued on its own merits, and let it not be said that one department is trying to abstract from the means of the other; or that sailors are clamoring for ships, because they are sailors; or soldiers asking for forts, because the forts belong to their service. But let us look at the question like men of business, and if we can discover what is right, let us set about carrying it out as far as may be practicable. The Commissioners recommended the application of one million of money to floating defenses; and if that had been appropriated at the time, it would have been quite as much as ought to be applied to such a purpose in the present transitional state of naval warfare. This sum, if it were taken up now as part of the

* It should also be borne in mind that the proposed works are for the defense of the dock-yards and arsenals only, and are assumed to be the least that could be sufficient for that limited purpose. They are not schemes for making the nation secure against all chances of invasion; and, though valuable auxiliaries in that respect, much of the criticism that has been lavished upon them arises from confounding the two purposes.

† There seems no reason to doubt that the forts may be constructed for the price originally estimated. Though iron is to be substituted for granite, the thinness of iron walls, and the absence of all internal piers, will enable their size to be reduced at least one-third, while carrying the same number of guns, and so equallize the expense within very narrow limits of variation.

loan, ought to satisfy all reasonable demands, without infringing on the more permanent works, which are far more essentially necessary for any general and comprehensive scheme of national defense. Neither stationary forts nor floating defenses will alone suffice for the purpose, but only such a combination of both as shall render the special advantages of either available. But so far as can at present be seen, the greater stress ought to be laid on the forts, not only on account of their greater economy, but because of their power of using heavier artillery than ships, and with greater accuracy of aim. Such forts, too, as it is proposed to erect at Spithead appear to be of a singularly formidable description, and being situated on the shingle banks in the middle of the sea, command the whole area of the roadstead with their fire at ranges which would now be efficient against wooden vessels, and which in all probability will be equally so against iron-plated ships with the artillery which may be prepared for them before they are completed. They have also the advantage that they can — without either materially increasing the expense or diminishing the number of guns—be plated with iron of such thickness as shall render them absolutely invulnerable against any artillery; and from this circumstance, and the peculiarity of their situation, they are at the same time impregnable by any means of attack we are acquainted with.

If not capable of being used as the sole means of defense, it must be admitted that such forts must form a very important element in any scheme of defense for an open roadstead; and that with the aid of a certain amount of floating defenses they ought to render our harbors as secure as any in the world. It is, however, just this necessity of the combination of the two that renders the question so difficult to decide. The advocates for ships and the advocates for forts have both reason on their sides to a certain point, and when this is the case a little superior talent or superior energy on the side of either party can secure for it at least a temporary triumph. The true statesman sees the advantage of the combination of both, and the real man of genius is he who can appreciate exactly how much of either is necessary to effect successfully the object in view.

From the St. James's Magazine.

THE TEMPTING ANGEL.

'Twas night: the moon was beaming
Along the azure sea,
Where spectral forms were gleaming
In ceaseless revelry.

When on a cliff a mortal stood,
A man of care was he,
Who peered upon the rolling flood
With eye of mystery.

He spake not, but he heaved a sigh
And gazed along the main,
Then turned toward the starry sky,
And sighed and gazed again.

When from the deep ascending,
Amidst a wreath of flame,
Her upward course attending,
A tempting spirit came.

Her face was pale though very fair,
Her eyes like diamonds shone,
Yet seemed there something in her air
Unlike a holy one.

A dagger in her hand she bore,
Its hilt a costly gem;
And on her head this spirit wore
A sparkling diadem.

The mortal soon the spirit saw,
His breast for fear he smote,
Then turned he from the rock to go,
When thus the phantom spoke:

"Mortal, this dagger take! Nay, grow not pale,
To every child of sorrow thus I fly.

Haste: fear not—doubt not—lift the shadowy vail
That hangs between thy clouded eye and immortality.
'Tis time to die!

"Fear not, fear not Eternity to try.
Strike—boldly strike! and leave this home of clay;
When, then like me, a spirit shalt thou fly
Midst stars, and suns, and orbs of light, to take thy heavenward way.
Come, Mortal, come!

"Shuddering thou stand'st, a poor, weak, foolish thing,
In mute astonishment and pale dismay:
Were it not better a bright course to wing
Above those orbs where ceaseless shines an all eternal day?
There is thy home!

"Oft hast thou wondered how the planets move—
How fiery comets erst their course began;
Oft has thou watched the bright sun's path above,
Still trying with impatient gaze the mystery to scan:
Thou know'st it not!

"Things yet unborn, when live they first? Whence came
Life's fitful flame? How long this globe shall last?
Where roamed the Iguanodon? Whence bursts the flame
Of fell volcanoes, thundering forth their hot sulphureous blast?
'Tis dark to thee!

"Oft hast thou pondered how the spring flowers bloom,
Yet why they bloom or die thou canst not tell;
Oft hast thou marveled how the tempests come;
Thou knowst it not, yet thou canst break the dark mysterious spell.
Come, then, with me!

"Why art thou here? What life? What time? What death?
Whence camest thou first? Why fearest thou now to go?
Come, come with me; yield up thy fleeting breath.
One gasp, one pang, one struggle, then adieu to all below!
Farewell to Time!"

And thus the tempting angel spoke:
Aghast the mortal stood,
Then aimed the dagger's fatal strok e,
And sank into the flood!

From the St. James's Magazine.

UNDER THE SEA AND THROUGH THE EARTH.

To one uninitiated in the practical working of the science of Electricity, the *modus operandi* of transmitting electrical signals or telegrams from one spot to another, through no matter what distance of sea or land intervening, is an object of wonder, and, until thoroughly studied and comprehended, appears somewhat akin to the fabulous; nor is this feeling of the marvelous at all diminished even when the exploits of this wonderful agent are fully understood.

The writer was invited some time ago to the instrument-room at the central station of the Submarine Telegraph Company to witness an experiment of sending a telegram over the longest distance of land and through the greatest extent of sea that was then possible—this was to the Island of Corfu, a distance of more than fifteen hundred miles.

A continuous wire was joined up from London to that island, but as the wire would be necessarily suspended from hundreds of poles, extending over such a great distance, and where perhaps at every connection a small amount of electric fluid would escape; and as, moreover, the wire never fully discharges itself, for a portion of electricity always lags on the way and eventually returns home again: the charge would not last out to reach its

destination without some additional assistance on the road. It therefore becomes necessary in such operations to refresh and invigorate the lightning, as in the old slow time a man would water his horses on the road, or as the Brighton "Age" would, in its then wonderful journeys, "change horses in half a minute."

To provide this assistance, instruments called *relays* were placed at distant intervals along the line, the object of which was to receive the nearly exhausted current of electricity, revive it instantaneously with additional strength, and send it on to the next relay, and so on till it arrived at its destination.

In order fully to realize this wonderful achievement, we will trace the progress of a message along the route from London to Corfu.

The transmitting instrument in connection with the battery generating the electricity is set in motion. A flash of electricity is liberated, and wings its way along an insulated wire, under the busy streets of London, and under the now quiet turnpike-roads to Dover, then under the surging waves through the submarine cable, peacefully lying at the bottom of the Channel, to Calais, where it mounts up to land again, traverses the intermediate country to Paris, picks up a relay of electricity charged from a local battery in waiting to revive its now languishing strength; and, reïnvigorated, pursues its silent and instantaneous flight through cities and towns without stopping, but every now and then receiving assistance and new life, till it arrives at Turin; thence on to Genoa, from whence with increased power it dashes through the submarine cable, one hundred miles in length, to Corsica, rushes over this island in the quickness of a thought, descends again into the sea, across the straits of Bonifacio to Sardinia, up on land again, through villages, and over the Gallura Mountains, where the deadly malaria fever lurks, that killed so many men in its construction, to the easternmost point of this island; then again taking a header through another submarine cable lying at the bottom of the deepest part of the Mediterranean to Malta, over its rocky ridges to the other side, from whence it finally flashes through another submarine cable under the sea to its destination, Corfu; doing the whole distance of fifteen hundred miles in *two seconds and a half*, and passing over, in its transit, some of the highest mountains in Europe, as well as five times descending more than a mile's depth into the ocean.

The estimated speed at which electricity travels is at the rate of two hundred and eighty-eight thousand miles in a second.

But the coming back of this mysterious agent is still more wonderful than its guided transit along the wire; for there it has an operator, philosopher, guide, and friend, to direct its course; but now it returns home again, not along a conductor supplied by man's ingenuity, but alone through the earth. "This world is all before it where to choose," for, after it has reached its destination and recorded its symbolic mission, it is transmitted down a wire, sunk in the earth for that purpose, to find its mysterious way back to the spot from whence it started, and passes up another wire similarly placed in the ground, again into the presence and power of the operator; for, until it has arrived at home, the electric circuit is not completed and no signal is given.

Wave after wave of electricity was transmitted, until the whole message of some twenty words had been communicated to the island of Corfu; the transit of the whole occupying six minutes; then a brief interval, and click, click, the serpentine length of paper unwinds itself, containing the reply, which came back in even less time than the message sent.

Fortunate was it for the science of telegraphy that this experiment was made just at that time, for it was fated not to be repeated over the same route again.

The cable between Sardinia and Malta, three hundred miles in length, broke soon after, either from the chafing upon a ridge of coral, or, not improbably from the action of a submarine volcano. From the same cause the Corfu soon followed the example of fragility, and, owing to the great depths of the Mediterranean, both cables have defied all efforts to repair them. They have now been abandoned, the Company deeming it expedient to change the route, and the communication is now kept up with Malta and Corfu by cables from Sicily.

Another wonderful instance of the marvelous facility of transmitting thoughts by the aid of the lightning has just been recorded. At a telegraph *soirée* given by Mr. Samuel Gurney, M.P., at his residence in Hyde Park, on the twenty-sixth

of March last, the Earl of Shaftesbury sent on a message to St. Peterburg, inquiring after the health of the Emperor of Russia, and in *four minutes* he received word from the banks of the Neva, a distance of two thousand miles, that he was in good health.

It was then proposed that the correspondence should proceed along a line making a tour of the whole of the Continent of Europe, and return through France to the starting-point in London.

St. Petersburg gave the signal that they had connected the wire from London which passed through Berlin on to Moscow. Moscow immediately did the same to Kiev, in Southern Russia. From here it extended through the vast tract of territory intervening to Temeswar, an important fortified town in Southern Hungary, near the frontier of Turkey; thence through Trieste, Venice, to Verona. From Verona it was telegraphed that the projected circuit of correspondence could not be completed, in consequence of an accident to the lines westward, between there and Turin.

But the telegraph lines as above described, extending from London to Verona, completed an unbroken circuit of upward of *five thousand miles*, through which messages passed as instantaneously as though the distance was only a few miles; relays of electricity being placed along the line at various intervals ready to be picked up as before mentioned.

This achievement is unparalleled in the annals of the science of telegraphy.

The wires of the Submarine Telegraph Company were extended for this occasion to Mr. Gurney's drawing-room, thereby placing an instantaneous communication to all the capitals of Europe at the disposal of the guests.

The great but short-lived success of the Atlantic cable, although disheartening for the time, is cheering to the projectors of a new line, from the certain and established fact that the causes of the last failure can be entirely guarded against for the future, and a final success predicted as a certainty.

In fact, so many improvements have been made both in the manufacture and mode of working submarine cables, that distance and speed of transmission appear to have now no limit, for to such perfection has the paying-out machinery been brought, that perfect success is only a question of fine weather.

Since the Atlantic cable was laid, several long deep-sea telegraph lines have been safely submerged, and worked with great success, in the Mediterranean.

The danger attending these operations required much more engineering skill and attention than the paying out of a line would along the almost level plateau existing between Ireland and Newfoundland; because the bottom of the Mediterranean presents the same geographical formation as the Alps. At one time the cable is resting on the top of a submarine mountain, while at another it makes an almost perpendicular descent of more than a mile's depth to reach the bottom of the ocean; yet in spite of this difficulty no less than twenty-three hundred and forty miles of telegraphic cable have been successfully laid and worked during the last two years—namely, between France and Algiers, Toulon and Corsica, Corfu and Otranto, Malta and Alexandria.

This fact at once indisputably establishes the entire practicability of laying and successfully working the telegraph-cable between Great Britain and America.

The working of submarine cables has also undergone a complete change; instead of a large quantity of electricity being transmitted at one time to overcome the resistance of the wire, the wave now communicated is as small and as weak as possible, so as not to wear out the cable unnecessarily. The practice of the science has also demonstrated that positive currents of electricity, or those generated from the copper pole of the battery, are better adapted to the working of submarine cables than the use of the negative currents, or those from the zinc pole of the battery, or both alternately, which, it has been observed, will soon find out the weak and defective places, and destroy the cables at those particular parts.

It was this that, in a measure, accelerated the fatal pause in the Atlantic cable, as every current sent along it literally only made matters worse by increasing the injuries which the cable had received previous to its submersion.

One of the modes of discovering the whereabouts of an injury to a submarine cable is extremely simple; namely, by sending a current of electricity along the

wire, and then by observing, upon an instrument called a galvanometer, the amount of electricity which returns, as in every case when a current is sent along a wire, the full discharge of that quantity does not take place at the other end, but small particles of electric fluid linger along the wire, and return to the instrument which sent it. Therefore, if the injury is near at hand, the return current will be comparatively small, because the greater part will have escaped into the sea; but if the injury be several miles away, the return current will be increased, as more of the electricity will have lingered along the wire in its transit over a greater distance, and only a small quantity will have arrived at the fault, and passed away, and by a mathematical calculation based upon these results, the distance of the fault is determined.

The cable is then dragged for about the spot indicated until it is found, then hauled on board, repaired, spliced, and dropped into the sea again. This is an operation requiring great care, experience, and judgment. At a recent repairing operation in the case of the Belgian cable, which was broken by a ship's anchor a short time since, it was found that, although the large iron wires of the outer covering were broken, as well as the internal copper conductor, yet so tenacious was the gutta percha, that it resisted the enormous strain, allowing itself to be literally drawn out from the size of a piece of macaroni to a shred of vermicelli, thus adding another fact to those already established of its indestructibility under water, and its superiority over all other insulating materials for submarine cables.

After a cable has been submerged some time, it becomes incrusted frequently to the size of a man's body, with thousands of muscles, zoöphytes, marine algæ, and infusoriæ. In the case of the cable laid along the Norwegian coast by the enterprising fishermen of that country, for the purpose of enabling them to telegraph from point to point the arrival of the herring shoals, the manager reports that a portion of it, being required to be taken up temporarily, was found to be incrusted to nearly the thickness of a man's body, with beautiful coral formations and other forms of carbonate of lime, and the lime-producing animals had made a nucleus of the external iron for the purpose of mooring themselves to the bottom and carrying on their work. Thus protected, were it not for ship's anchors, it may remain undisturbed to the end of time, as in no instance has gutta percha been found to decay under water, which appears rather to improve than deteriorate its insulating properties.

The very first cable ever laid, which was from Dover to Calais in 1851, is as good and as perfect as on the day it was finished.

Of the five proposed telegraph routes to America, namely—from Ireland to Newfoundland; France to the Island of St. Pierre, and thence to Newfoundland; Spain to Madeira, the Azores, and the Brazils; the Faro Islands, Iceland, and Greenland to Newfoundland; and, lastly, the Russian overland route to unite the south of China with America—the first decidedly has the precedence over the others for various and obvious reasons, one of the number being that it would be under British control, both ends landing on English territory, and also that it has been *un fait accompli*.

That from France to St. Pierre has the next best chance of being carried out, as it is said the Emperor Napoleon is most anxious to have it done, and has offered a guarantee of seven per cent upon the capital, conditionally upon the cable continuing in working order.

Then comes the Spanish scheme, which, from the great distance to be traversed, will require such a large amount of capital, that the traffic must be very great to make it pay, even if the enormous capital required were ever subscribed. The Queen of Spain has, however, granted the projectors a guarantee, and has intimated her wish to become the first shareholder.

Next is the northern route *viâ* Iceland and Labrador, of which so much has been put forward lately by the parties interested, but which is the least likely of any of the routes to be successfully carried out, as the temperature and magnetic influences may prove an insurmountable obstacle to the successful working of electric instruments in those desolate regions, so frequently agitated by snow-storms and volcanoes, independently of the danger to the cables from the grounding of icebergs.

Lastly, there remains the proposed route through Russia and Asia, which at present appears thoroughly impracticable, not only from the great extent of land to be

traversed, but also from the depredations of turbulent tribes inhabiting those uncivilized regions.

The telegraph instrument now universally adopted is an improved arrangement of that invented by Professor Morse, and which records its telegrams in ciphers of long and short dashes upon a continuous slip of paper.

The old system of the vibrating-needle instruments patented by Professor Wheatstone and Mr. Cooke, is now very little used, as the constant watching of the vibration of the needles produces an injurious effect upon the eye of the operator. After laborious service, and especially after service at night, the retina is frequently so affected that for a considerable time all small objects appear double and shrouded in a haze.

Another system, invented by Sir Charles Bright, has been successfully adopted by the British and Irish Magnetic Telegraph Company, namely, that of telegraphing by sound produced on two small bells, the *employés* deciphering the signals by listening with their ears instead of watching with their eyes.

It is reported that the Post-office authorities have proposed to the Government to buy up all the telegraph lines in England, and that the whole system should be transferred to them, and every post-office in town and country should become a telegraph office—a uniform rate and postal system being adopted. A similar plan was suggested to the Government of the late Sir Robert Peel in 1845, by Mr. J. W. Brett, who has done so much for telegraphy in introducing and establishing the invention of the submarine telegraph, and although hundreds of patents have been taken out for different kinds of cables, the original spiral form of twisted wires for the outer covering, originally adopted by Mr. Brett, still keeps its ground.

T. A. Masey.

From the Dublin University Magazine.

WAKING VISIONS.

BY JONATHAN FREKE SLINGSBY.

"A dream, and fruitless vision."—*Shakspeare.*

Visions of beauty! dreams of my childhood!
Come back again in your witching array;
Sweet as the warblings of birds in the wild wood,
Fresh as the dew-beads in mornings of May.
Oh! let my spirit dreamily wander
Once again back to those far-away hours;
Love as I loved then, purer and fonder,
Heaven all sunshine and earth strewed with flowers.

Visions of glory! bright as the noon-day,
Come back again in your richness and truth;
Gorgeous and warm, as the sun of a June-day,
Wild, as the mountain-stream—Visions of youth!
Oh! let my spirit bathe in your splendor;
Life throbbing strongly through heart and through vein,
Love—a deep passion, holy and tender;
Pleasure—the life-wine my soul sought to drain.

Visions of greatness, knowledge, and power!
Come back again as ye were in my prime;
Mellow in promise of fruit from the flower,
Fame from the lay—Manhood's ripe autumn-time.
Oh! let my spirit cling in its longing
Still to those visions that flattered and fled;
Let me re-people my heart with the thronging
Of phantoms that cheated, of hopes that are dead.

Visions! all visions! How sad to remember
Beauty and glory and greatness when gone—
Spring, summer, autumn, all past—and December
With snow-flake and cloud coming gloomily on!
Echo of strings long untouched by the finger—
Odor of life when its flowers decay,
Memory—how fondly the soul loves to linger
Through thy dim shadow-land wandering away.

Visions! all visions! the dreams of the sleeper.
Man walks in shadows from cradle to tomb,
In shadows that ever grow darker and deeper
As his life-sun goes down to its setting in gloom.
The Past all illusion—the Present flits from us;
It dies as we grasp it and turns into Past.
The Future, all darkness, gives only one promise—
When our journey is over, the grave-rest at last.

Oh! let my spirit slumber no longer,
Lapped in those visions delusive and sad.
Awake! let thy ken become clearer and stronger
To pierce those life-shadows, my soul, and be glad.
All is not darkness—from regions elysian
Through the grave, as it opens, a light thou canst view.
Evanish ye shadows! dissolve every vision!
For all things in heaven are real and true.

From the St. James's Magazine.

THE GROWTH OF LONDON.

London is, in one respect, the most wonderful of cities. It seems to possess an unlimited power of expansion. Step by step, from year to year, its growth advances, as it enfolds new suburbs to its bosom. This process has been going on for ages, until the traveler of the present can scarcely realize the scenes of the past. As we move amid the throng of passengers, and listen to the undying hum of commerce, it is difficult to think of the Metropolis as comprised within the ancient city walls and gates of which the names alone remain. Still more difficult is it to conceive of a time when the Thames flowed silently through green banks and deep forests.

Our forefathers, even in barbarous ages, seem to have possessed in a remarkable degree the faculty of choosing suitable sites for cities. Though many proofs of this might be found, there is none clearer than their choice of a capital. It is mainly the excellent commercial situation of London which has brought it, in the course of time, to its present astonishing greatness and importance. As we muse on the

many advantages of it position, we can forgive the enthusiasm, if not the poetry, of Drayton, in the following lines from his Polyolbion:

"Oh! more than mortal man
Who did this town begin,
Whose knowledge found the place
So fit to set it in.
What god or heavenly power
Was harbored in thy breast?"

All attempts to fix the date of the foundation have failed. The monks and poets of the middle ages loved to ascribe it to Brutus, the fabulous Trojan hero. Sir Christopher Wren remarks that London must have been the chief seat of trade between the ancient Britons and the Gauls. The Romans did not subjugate it till the reign of Claudius; but Tacitus mentions it as of great note in the time of Nero.

The true meaning and derivation of the name are matters of much dispute. Sir Christopher Wren derived it from two British words, signifying "Ship hill," or "a harbor of ships;" Maitland, from two Gaelic words, "Lon," a plain, and "Dun," or "Don," a hill. Perhaps the most probable theory is that of Pennant, who traces the name to the Celtic terms "Llyn," a lake, and "Din," a town. No less pains have been taken to define the point at which the town commenced. It appears, on many accounts, likely that the first buildings were at or near Cheapside.

During the early days of the Roman occupation of Britain, London suffered much from war. It was burnt in the revolt of Queen Boadicea by the Romans, and plundered by the Picts in 297. There is, however, ample evidence that Roman London became a city of magnitude, and even magnificence. We are able to trace the boundaries pretty accurately. These would seem originally to have been the Thames on the south, and a line on the north a little beyond Guildhall. The burial-places, which with the Romans were always outside their cities, are proved by the funeral urns and other relics discovered, to have been in Spitalfields, Goodmanfields, Bishopsgate, and St. Paul's Churchyard. But the city outgrew these limits; for the wall built in the reign of Constantine the Great inclosed a much larger space. It ran from the Tower, by the Minories and Houndsditch, to Bishopsgate; then to Cripplegate along London Wall; thence to Aldersgate, whence, turning southward at an angle, it passed through Ludgate and behind Newgate to the Thames, which it skirted all the way back to the Tower. Many handsome villas must have existed at this period, as their ruins testify; and the numerous Roman remains from time to time found, in the shape of articles of artistic elegance and value, give us an idea of considerable wealth. The great Roman Highway, or main road, was Watling street, stretching from the ancient London Stone, which still exists, in Cannon street, to the Tower. It is worthy of remark, that the modern level of the city is about fifteen or twenty feet higher than that of those days; so that the footsteps of the citizens of the present are level with the first-floor windows of the Romans. A great deal of draining and embankment was needed, for the waters of the Thames then spread far and wide. Chelsea and Battersea were lakes, the West-End a marsh, and Finsbury a forest. A single bridge of wood spanned the river.

We catch but very few glimpses of London at the time of the Saxon invasion of England. It would seem to have escaped ruin from the invaders, and to have been occupied with but slight alteration. On the introduction of Christianity, through the preaching of Augustine, a church dedicated to St. Paul was erected on Ludgate Hill (where a temple to Diana had formerly stood) by Ethelbert, King of Kent. Soon after, Sebert, King of the East-Saxons, built one at Westminster—then a place of thickets and fens—which was said to be miraculously consecrated by St. Peter. The sites of these churches are now occupied by the noble Cathedral and venerable Abbey which are our city's architectural pride.

In the year 833, a Witenagemot was held in England. This was probably the first Parliamentary assembly within its walls—not an assembly of courtly nobles or educated commoners, but a gathering of bearded warriors, anxious to devise means for repelling the "Black Danes." Whatever were the measures agreed on for resistance to those terrible invaders, they did not succeed; for in 839 the city was sacked. And whenever the citizens of London appear in history during the next hundred years, it is as harassed by guerrilla incursions from the bands of Denmark. Fires, too, were frequent. Speede tells us, that: "In the year 982 the citie London was

miserably destroyed and defaced by fire; whose beautie then chiefly extended from Ludgate westward—for that within the walles, and where the heart of the citie now is, was then neither beautiful nor orderly built." However, damages of every sort were quickly repaired by the inhabitants with timber from the then extensive forests of Islington and Hornsey. On the amalgamation of the kingdoms of the heptarchy, London gradually assumed its position as the capital of all England. The first of the long line of coronations at Westminster was that of Edmund Ironside. Edward the Confessor rebuilt St. Peter's Church there, and erected a Palace adjoining it. Here he spent the last days of his life, and died in the room called the Painted Chamber, while his subjects were keeping the Christmas festival.

There is little to enable us to create for ourselves a picture of Saxon London. But, as Lambarde assures us, "there want not innumerable testimonies of all the Saxon authors, that during all the tyme of their government it bare the bell." Bede calls it "a princely town of trade."

After the battle of Hastings, the Londoners at first resolved to fight for their independence of Norman rule. William the Conqueror hastened toward the city; but meeting on the way with some resistance, he changed his mind, and turned back to Berkhampstead, in Hertfordshire. There he took up his quarters in the old castle of the kings of Mercia — the ruins of which adorn that town to this day — and began to consider what he should do. He was spared the necessity of fighting. The clergy of London, with Stigand the primate at their head, declared for the Conqueror; and the city submitted. William was crowned at Westminster — not without a disturbance—and granted the following charter, consisting of four lines and a quarter in the Saxon character, on a slip of parchment six inches long:

"William the King greets William the Bishop and Godfrey the Portreeve, and all the burgesses in London, both French and English. And I declare that I grant you to be all lawworthy, as you were in the days of King Edward; and I grant that every child shall be his father's heir after his father's days; and I will not suffer any person to do wrong."

With the Norman Conquest seems to have commenced the architectural beauty of London. William I. erected the White Tower, the nucleus of the present fortress. This is said to have been designed by Gundulph, Bishop of Rochester. Westminster Hall owes its origin to William Rufus. When, about the end of the century, St. Paul's Church was destroyed by fire, the splendid Gothic structure known as "Old St. Paul's" was reared in its stead. Many noble priories — as St. Bartholomew at Smithfield, and St. John of Jerusalem at Clerkenwell—graced the commencement of the twelfth century. The chapel of St. Stephen at Westminster, destined for many ages to accommodate the House of Commons, was built fifty years later. And in 1176, the wooden bridge over the river having become ruinous, there was commenced one of stone, under the direction of Peter of Colechurch. This was a great work for the age, and was not completed until 1209. The Temple Church adorned Fleet street ere the twelfth century ran out.

We get a tolerably clear view of London in the reign of Henry II. Small, indeed, it would have appeared to modern eyes. The population was estimated by Peter of Blois at forty thousand. Orchards flourished where Paternoster Row and Ivy Lane now stand. The youth of the city took summer strolls to Clerkenwell, Holywell, and St. Clement's Well, of which the waters were greatly esteemed. Smithfield — then called Smoothfield, and described as in the suburb without the gate — was the horse-market, and not unfrequently the race-course. The forests on the north abounded with stags, wild bulls, boars, and fallow-deer. Yet Fitzstephen, a monk of Canterbury, who died in 1191, has left a glowing description of the wealth, power, and importance of the metropolis. There were, he tells us, thirteen conventual and one hundred and thirty-six parochial churches, and three public schools. The citizens were patterns of social elegance, of domestic virtue, and of respect for religion. Into the city flowed the gold and spices of the East, the furs of the North, and the wines of the South. "The only plagues," says he, "are the intemperate drinking of foolish people, and the frequent fires." The last of these evils was in some measure corrected by an ordinance of Richard I., in 1191, commanding that all houses should be built of stone. For the former "plague," modern science has not yet discovered, or at least applied, any adequate remedy.

It is not the purpose of the present article to enter into the history of London. We must therefore pass rapidly over the Plantagenet and Tudor reigns, nor be tempted to turn aside for even a passing glance at the many stirring events which took place within the walls. The march of the Crusaders from St. John's Gate at Clerkenwell, the rebellion of Wat Tyler, the preaching of the Reformers at Paul's Cross, the burning of the Marian martyrs in Smithfield, must not compel us to linger; but we may notice the improvements which were introduced during the thirteenth, fourteenth, and fifteenth centuries, and record what can be gathered as to the growth of the city.

In 1218, the forest of Middlesex was cleared, and the land sold for building. In 1221, the first stone of the present Westminster Abbey was laid by Henry III.

The great question of a supply of water engaged public attention in 1236. Hitherto various wells and springs had supplied the city; but these now began to fail and grow insufficient. A plan was therefore devised by which water was brought from the village of Tyburn in leaden pipes to conduits or cisterns erected in various streets; and this was found to answer satisfactorily.

Coal began to be used in the manufactures in the early part of the fourteenth century. At first it was much opposed by the citizens. The smoke was voted a dangerous nuisance, and an act passed in 1316 actually forbade the burning of coal. But its superiority as fuel, and the growing scarcity of wood, secured its ultimate adoption—more especially as levying taxes on it was soon found to be a fruitful source of revenue.

London over the water may be said to have first fairly commenced in the reign of Edward III. For some time felons had been in the habit of escaping over London Bridge into the village of Southwark, and thus defying and evading the law of the metropolis. Edward therefore annexed the village to London, and brought it under civic rule. As early, however, as 1191, Lambeth Palace had been erected.

We get a quaint and distinct picture of London life and trade at the close of the fourteenth, or opening of the fifteenth century, in *London Lackpenny*, a poem by Lydgate. It describes a poor countryman as coming up to London to prosecute a lawsuit, being confounded by the clamor everywhere around him, and finding that he could obtain nothing for want of money. The poem is far too lengthy to quote entire, but a few lines describing some of the chief resorts of trade will be interesting. The countryman, after failing to enlist the sympathies of the lawyers of Westminster Hall without fee, and being moreover tantalized with the offer of all kinds of luxuries in exchange for the cash he lacked, tells us:

"Then unto London I did me hie,
Of all the land it beareth the prize.
'Hot peascods!' one began to cry,
'Strawberries ripe!' and 'Cherries in the rise!'*
And bad me come near, and buy some spice.
Pepper and saffron they gan me bede,†
But for lack of money I might not speed.
Then to the Chepe I began me drawn,
Where much people I saw for to stand;
One offered me velvet, silk, and lawn,
Another he taketh me by the hand:
'Here is Paris thread, the finest in the land.'
Then full I went by London Stone,
Throughout all Canwyke street;
Drapers much cloth offered me anon,
Then comes me one cried 'Hot sheep's-feet.'
One cried 'mackerel,' 'ryster green,' another gan greet.
Then I hied me unto Eastchepe;
One cries ribs of beef, and many a pie;
Pewter-pots they clattered on a heap;
There was harp, pipe, and minstrelsy."

The poem closes with the following benediction for the "limbs of the law:"

"Now Jesu, that in Bethlehem was born,
Save London, and send all true lawyers their meed—
For whoso lacks money with them shall not speed."

During the mayoralty of Sir Henry Barton, in 1416, an attempt was for the first time made to light the streets of London at night. The inhabitants were ordered to hang out lanterns before their doors in the winter evenings between Allhallows and Candlemas; and a watchman was nightly heard to cry in the streets: "Hang out your lights!" Feeble as was the glimmer of these, they must have been a great comfort to the dwellers in "lovely London," as the city is called about this time in the ballad of Chevy Chase. Soon after, Leadenhall was

* Branch.
† Began to offer me.

erected as a public granary for storing corn against a time of dearth; and Newgate was rebuilt by the executors of the famous Dick Whittington, thrice Lord Mayor. The portion of London within the walls now became closely crowded. The palaces of the nobility and the merchant-princes adorned it. The torrent of trade and population began to overflow. But the houses were still largely built of wood and clay, with one story jutting out over the other until the top of the street was but a narrow chink to let in light. The furniture, even of mansions, was rude; the floors strewed with rushes seldom renewed; the supply both of water and air deficient. Holinshed describes London, in the early part of the sixteenth century, as presenting but "a mean appearance in comparison with foreign cities."

Greatly had London increased in size when Elizabeth ascended the throne; and it continued to grow so rapidly during her reign that its extension was forbidden. Yet, when we turn to the map drawn by Aggas, in 1560, we are forced to smile at what our forefathers considered the wondrous stretch of the city. "Finsburie Field" was a field indeed, and a place of practice for archers, though it was getting dotted here and there with houses, much to the annoyance of the said archers. There were three windmills, too, on the open ground hard by. Spitalfields were equally verdant; Goodmanfields still more so. Clerkenwell was not yet annexed. The Strand was a kind of lane from London to Westminster, ornamented on the south side with noblemen's mansions running down to the water's edge. All west of Charing Cross was open country, Spring Gardens having a bowling-green and several favorite promenades. There were a few scattered buildings on the north side of Holborn, along the road to St. Giles-in-the-Fields. St. Pancras, Kentish Town, Islington, and Tottenham Court, were villages only to be reached by a rural and somewhat dangerous walk. On the Surrey side of the river there were not ten buildings between Lambeth and where the west foot of Blackfriars Bridge now stands. From thence to the Borough there was a row of houses, and a few more were scattered between Tooley street and Horsleydown. On the accession of James I. the whole population of London was calculated at one hundred and fifty thousand.

When the civil war broke out between Charles I. and the Parliament, an assault from the army of Prince Rupert was feared, and fortifications were erected around the city in consequence. The position of the entrance to these gives us an an idea of the dimensions London had then attained. The first entrance was near the windmill, Whitechapel Road; the second at Shoreditch; the third in St. John Street; the fourth at Tyburn, St. Giles's Fields; the fifth at Hyde Park Corner.

The assault came not; but London was ere long to pass through a more terrible ordeal—a baptism of fire! In 1666 the Great Fire laid the main portion of the Metropolis in ashes. Four hundred and thirty-six acres were covered with the ruins. From Temple Bar to Bishopsgate, and from Holborn to London Bridge, masses of flaming or charred timber, mingled with calcined stones and melted metal, were all that remained of the proud and mighty town. Four hundred streets, thirteen thousand houses, eighty-seven parish churches, and six chapels, the grand old cathedral of St. Paul, and the whole of the public buildings, were withered from the face of the earth. Seven million pounds' worth of property was utterly destroyed.

Fearful as was this devastation, the city rose again with marvelous rapidity. It must ever be a source of regret that the plans of such men as Wren, Evelyn, and others, for its reconstruction, were not carried out. The attachment of the people to the sites of their former dwellings prevented this. They insisted on rebuilding their own houses after their own fashion. It is probable, however, that the event tended to widen rather than contract the boundaries of the city; and it was certainly most beneficially effectual in clearing away the narrow streets and cumbrous wooden buildings, which had now to be replaced by structures of brick.

London may be supposed to have in some degree recovered from the Great Fire by 1690. The population was then half a million, and houses were estimated at eighty-seven thousand. The buildings within the walls had nearly risen from their ruins, and Spitalfields had become covered with dwellings. The modern West End, too, was beginning to appear, for St. James's Square and Church were just built, and a chain of houses linked

them to Temple Bar. Burlington House had also been reared. But all northward and westward of this was open land, with ponds for fishers and covers for sportsmen. Conduit Street was a meadow with a celebrated water-spring; and Oxford Street (then called the Oxford Road) ran between hedges. Chelsea was still a quiet country village, and so was Islington. The nobility and the *élite* of the mercantile community lived yet in the city, in those palaces many of which are now standing to testify of its by-gone architectural grandeur.

As the eighteenth century commenced, London still progressed to the north and west. The revocation of the Edict of Nantes had driven many French Protestant refugees to England, who settled in St. Giles's and .Spitalfields. The district called Seven Dials sprang up. Bedford Row, Red Lion Square, and the whole district north of Holborn, were added to the swiftly-growing city. Bloomsbury Square, (then called Southampton Square,) Soho Square, (then called King's Square,) and Golden Square, followed suit. Soon Shoreditch, Clerkenwell, and the hitherto solitary Islington, began to be drawn in. From Bond Street to Marylebone houses were rearing in 1717; Rathbone Place was built in 1718; and in 1726 was completed the church of St. Martin-in-the-Fields. Berkeley Square arose in the far west, while in the east the parish of Wapping was formed. The Fleet Ditch was covered over, and Fleet Market built therein. Paddington was joined with Islington by the New Road. Grosvenor Square also belongs to this period.

By 1750 the West End was a compact mass of houses. The boundaries of London on the north side of the river were then somewhat as follows: Starting eastward, from Portland Square, crossing Tottenham Court Road, we pass Bloomsbury and travel on through Clerkenwell, Finsbury Square, Spitalfields, and Whitechapel, to Wapping. We quote the following description of the north-west portion of the Metropolis about 1766 from a recent publication:

"Great Portland Street, Marylebone, was then almost in the country. An irregular lane between fields and hedges led from Portland Chapel to the New Road, where was a turnstile. . . . Cavendish Square was then on the very outskirts of the town. There was a very large farm where Osnaburgh Street now begins, and eight or ten large hayricks used to stand there in a row. At that time the church of St. Giles-in-the-Fields had only recently been surrounded by buildings, and six small almshouses stood in the very middle of High Street. North-west of Russell Square was a large farm, occupied by two very eccentric old maiden sisters named Capper. A few straggling houses flanked the northern part of Tottenham Court Road, Hanway Street was a place for fashionable shops, and Rathbone Place was tenanted by people of wealth and station. Whitefield's Chapel had been built in 1754, on the site of a large pond, which was called the Little Sea. Windmill Street, just beyond it, was recommended for lodgings to invalids by physicians for the sake of its pure country air. Northward, there was an open extent of fields, with numerous turnstiles; and the pipes of the New River Company were carried on long props, six or eight feet high, beneath which watercresses used to grow abundantly."

While London outgrew so mightily, internal improvements were not suspended. The shops, which had for ages been open and unglazed, began, about 1710, to be enriched with plate-glass windows. The "Tatler" tell us of "private shops that stand upon Corinthian pillars, and whole rows of tin-pots showing themselves through a sash window." And in 1762 was passed a paving act, than which none was ever more needful. For centuries, the filthy and undrained streets had been an eye-sore to foreigners, as well as a fruitful source of accident and discomfort; while only a few favored spots could boast of pavement. Now, at length, steps were taken to remedy this evil. Another almost equally great was cured, by the removal of the old signs which hung over the shops, and of many other obstructions to the thoroughfares. The system of numbering the houses was commenced in 1764.

During all the preceding centuries, but a single bridge had girded the Thames. The traffic across London Bridge now became so great, and its distance from the West End so inconvenient, that in 1738 a Parliamentary grant for a new bridge was obtained, and Westminster Bridge was completed in 1754. Blackfriars followed in 1770.

Onward, and still onward, to the north, London advanced. The latter part of the century saw Bedford, Russell, and Brunswick Squares laid out, and the parishes of St. Pancras and Marylebone formed. Somers Town was commenced in 1786. Lord Camden, in 1790, let land

on his estate, near Kentish Town, for building fourteen hundred houses, and thus commenced the modern Camden Town.

Public attention in the opening years of the present century was directed to one of London's most pressing wants—that of suitable docks for her maritime trade. The Greenland (now called the Commercial) Docks, made in the seventeenth century, on the Surrey side of the river, were the only ones she could boast. So speedily, however, was this defect remedied, that, within a very short space of each other, the West-India, the London, and the East-India Docks were opened. The last of these were completed in 1806. Since then the St. Katherine's and Victoria Docks have been added.

But there was yet to be revealed to the metropolis a still greater benefit. Hitherto, during the winter nights, the city had been lighted only by occasional oil lamps, which served for scarcely more than to make darkness visible. In 1807, Mr. Winsor, a German, lighted one side of Pall Mall with gas. The idea was, of course, jeered at as chimerical, and, for want of means of purifying the gas, seemed at first of doubtful feasibility. However, in 1810, an act of incorporation, and in 1812 a charter, were obtained for a gas company. In the following year, Mr. Samuel Clegg devised many very useful improvements. Ere long it was confessed that the great triumph of turning night into day had been fairly achieved. The metropolis now nightly shines, as Lord Macaulay observes, with a splendor to which the illuminations for La Hogue and Blenheim would have looked pale.

From the accession of George IV. to the Regency, London has advanced, both in size and beauty, beyond all precedent. Whole districts, large as cities, have arisen as by the wand of the enchanter. Belgravia and Pimlico on the south of Hyde Park; Tyburnia on the north; the noble sweep of Regent street, the Regent's Park, with its splendid terraces, Trafalgar Square, Portland Place, and the chief buildings which beautify Pall Mall, are the growth of the last forty years. Waterloo, Hungerford, Vauxhall, and Southwark Bridges have spanned the Thames; and that marvel of engineering skill, the Thames Tunnel, has afforded a passage beneath its waters. The monuments of Nelson and the Duke of York, with statues innumerable, of various merit, relieve the monotony of a succession of dwelling-houses. The introduction of railways has afforded the means of pouring into the bosom of London the produce and manufactures of every part of the land; while steamships and electric telegraphs connect it with the whole habitable globe. And still the mighty hive of industry spreads, till it seems ready to engulf the hights of Hampstead and Highgate on the north, and the Surrey Hills to the southward.

The census returns just published show that there are at present, in London and its suburbs, within the limits of the Metropolis Local Management Act, 362,890 inhabited houses. The area covered by these may be roughly estimated at 80,000 acres. The population is 2,803,034. Thus, there are now just four times the number of houses, and nearly six times the population, of 1690.

Our task is now ended. We have traced London from the cluster of mud-huts reared by the Celtic savages to the splendid position of the largest city, and the capital of the foremost nation, in the world.

The growth of London is a grand spectacle. It represents to us the toil and the talent of by-gone generations who slumber in its crowded church-yards, or beneath its many steeples. It is a type of that marvelous British colonization which is expanding over the whole world. May it prove also a type of the progress of those principles of sound political wisdom which have made England great, glorious, and free! And may it image the spread of that civil and religious liberty which England so happily enjoys!

From the Dublin University Magazine.

GREAT SCHOLARS AND GREAT EATERS.

"How empty learning, and how vain is art,
But as it mends the life, and guides the heart."—YOUNG.

DOES very extensive erudition, with all its multiplied lights, necessarily render the few exceptional possessors more happy or amiable than the comparatively ignorant many, whose endowments are circumscribed by the rays of a farthing candle? Perhaps not. And does not learning too often engender arrogance and pride? The habitual bitterness of polemical discussion, whether scholastic, political, or theological, answers the question in the affirmative. Eminent examples also present themselves readily, backed by the arguments of philosophers of acute instinct in the estimate of man's faculties and their application. We speak not here of poverty, so often quoted as the domestic skeleton of literature. We pass over Otway's crust, Nat. Lee's strait-waistcoat, Lydiat's single shirt in three months, and Chatterton's vial of poison. We do not pause to "mark" with Dr. Johnson,

"What ills the scholar's life assail,
Toil, envy, want, the patron, and the jail."

We confine our thoughts to the moral effect of inordinate learning on the mind and feelings of the voracious recipient.

The wise king of Israel, the first of all authorities on the subject, writing twenty-eight hundred and sixty years ago, records his opinion thus: "And further, by these, my son, be admonished: of making many books there is no end; and much study is a weariness of the flesh." Lord Bacon tells us, that Socrates, Aristotle, and Galen were full of ostentation; and that Cicero, Seneca, and Pliny the younger, abounded in vanity. Cicero bears record against himself—"Quid nostri philosophi? Nonne in his libris ipsis, quos scribunt de contemnenda gloria, sua nomina inscribunt."—What do our philosophers do? Do they not, in those very books which they write on despising glory, set their names in the title-page?

Again, Bacon says: "Too much learning breedeth self-love, and inflateth the owner. Wisdom for a man's self is, in many branches thereof, a depraved thing. It is the wisdom of rats that will be sure to leave a house somewhat before it fall; it is the wisdom of the fox, that thrusts out the badger who digged and made room for him; it is the wisdom of crocodiles, that shed tears when they would devour." And again: "To spend too much time in studies is sloth; to use them too much for ornament is affectation; to make judgment wholly by their rules is the caprice of a scholar." Of what use to the world to which he belonged without mixing with it was the vast congeries of learning, piled up in the cerebral cells of Magliabechi, who passed the greater part of a life protracted to eighty years, in a wooden cradle, fixed in the middle of his study, surrounded by dirt, cobwebs well tenanted with spiders, and fusty manuscripts piled round him to such a hight that he could scarcely be seen; and which sometimes, for the sake of variety, he made his couch of repose?

Joseph Justus Scaliger, born at Agen, in Guienne, A.D. 1540, was perhaps one of the profoundest scholars that ever lived. But he was presuming, self-sufficient, and censorious, with scarcely a civil word for any one, and with but rare and transient glimpses of good temper. His constitutional vanity and insolence he appears to have inherited from his scarcely less celebrated father, Julius Cæsar Scaliger, generally designated as the elder. This respectable paterfamilias being asked by a friend what he would like to have said of him in a forthcoming work, replied: "Endeavor to collect your best ideas of what Masinissa, Xenophon, and Plato were, and

your portrait will have some, although an imperfect resemblance, of me." The answer is extant in the printed collection of the elder Scaliger's letters, or it could scarcely be received as credible. Joseph Scaliger, the younger, was master of thirteen languages, but his heart was far inferior to his head. Some have called him, "the honor and miracle of his age—a second Varro;" others, "the master of all, the support, Apollo, and Æsculapius of the Muses;" "the dictator of the republic of letters, the divinity, and the incomparable man of science." Lipsius and the Bishop of Avranches agreed in saying, that "if the Scaligers, father and son, were not princes, they deserved sovereign rank from the brightness of their genius and the marvelous extent of their knowledge." The two boasted of descent from the family of the Escali, long princes of Verona; but this was considered an empty flourish.

The following distich was written for Joseph Scaliger, but the author's name has not been preserved:

"Nec tibi secla parem, Scalane, priora tulerunt,
Nec tibi secla parem posteriora ferunt."

Notwithstanding the superlative praise so freely bestowed on himself, no one ever dealt more severely and indiscriminately in sweeping censure of his brethren of the quill, whether antecedent or cotemporaneous. Origen, he plainly calls a dreamer; Justin Martyr, a simpleton; St. Jerome, an ignoramus; St. Chrysostom, a proud rascal; Rufinus, a base villain; St. Basil, a pompous assumer; Epiphanius, an illiterate dunce; and Thomas Aquinas, a formal pedant.

Hard words, and a goodly assemblage of vituperative epithets, resembling the style in favor with modern ecclesiastical controversialists. Neither was this human porcupine less measured in his sentences on the literati of his own day. Because he surpassed them in certain points, he denied them merit in others, and undervalued their reputation in all. Jacques Cappel he denounces as a ridiculous fool; Sir Henry Saville, Queen Elizabeth's Greek tutor, he calls a haughty ass; Clavius, he stigmatizes as a beast; Cornelius Bertram, the renowned Hebrew Professor at Geneva and Lausanne, he writes down as a conceited fellow; Maldonat, as a mere plagiarist of Calvin and Beza; Aldus Manutius, the grandfather of the three generations who invented and immortalized the Aldine, or Italian type of printing, he undervalues as a weak mind; Silvandus Lubertus is with him a mere rustic; Cœlius Curio, a wretched pretender; Jerome Mercurialis, a great beast; Paul Merula, a contemptible impostor; and Walther, a poor animal. Cardinal Penori is treated by Scaliger as an ambitious boaster; Ericius Puternus and Wouver as relators of idle tales; Robertel and Meursius, as shallow pedants; Mellius he calls an ape, and Hoffman a plagiarist; Lindenbeuch he condemns as a coxcomb; Christmanus, as an empty sciolist; Victorius, as a mere copier of others, without judgment; Lipsius, one of his own warmest panegyrists, he rewards by abuse, including in the same pile Cardan and Montanus. The list is as interminable as the line of Banquo's shadowy descendants, but we must close it here. The Lutherans, as a body, are called barbarians; and all the Jesuits asses. Scaliger himself, it must be remembered, professed Calvinism.

To balance the account, we search in vain for a *per contra* page of eulogy, but no such variation is to be found. That this man was unamiable is certain. Could he have been happy? Who shall say, Yes? Does he not more palpably invert the popular apophthegm, "A *little* learning is a dangerous thing"? How he escaped without broken bones from the legion of the *genus irritabile* on whom he had poured such torrents of abuse, is scarcely less than a miracle.

The English have always been considered by Continentals as having a very barbarous pronunciation of Latin. No foreigner can follow us. This is not a vice of modern date. Scaliger says, in his three hundred and fifty-second Epistle: "Even the best linguists in England speak Latin so wretchedly, that I remember being in company with an Englishman of that description, a scholar, as he thought and called himself, who talked what he meant for Latin to me for a complete quarter of an hour, and whom I understood no more than if he had jabbered in Turkish. 'Sir,' said I, 'you must excuse me, but I am very indifferently acquainted with English.' On this, my friend who had introduced me burst out into a loud fit of laughter, which so confounded the stranger and myself, that we never met afterward without mutual embarrassment. I did not mean to make my affront so palpable, al-

though the monster deserved a severer rebuke."

Professed criticism is a branch of letters which excites more virulent and spiteful sensations than any other. Perhaps not so much from the natural disposition of the critics, as from a conviction, soon arrived at, that censure is more rabidly swallowed than praise. It is also incalculably easier. Aristarchus and Zoilus amongst the ancients, Freron, Geoffroy, and Dennis with the moderns, are usually quoted as types of acrimonious invective when wielding the censorial tomahawk. But they, and all of their class, must yield the palm to Gaspar Scioppius, born in the Palatinate in 1576, and whose systematic spite obtained for him the title of the "grammatical cur." At sixteen he published some critical severities which made his name at once remarkable. Educated as a Protestant, he abjured the reformed faith, and became a Romanist in 1599, at twenty-three. But, both before and after his conversion, he vented himself in furious and anonymous assaults upon the Jesuits. Neither did he spare his former brethren. Joseph Scaliger he particularly distinguished by his diatribes, forming (saith Guillandin) a noted exception to the band of flatterers by whom that equally bitter disputant was so profusely glorified. His treatises against our British Solomon, James I., nearly cost him his life. He was waylaid, desperately wounded, and almost slain, by the servants of Sir Henry Wootton, the English ambassador, in 1614. He even attacked the person and reputation of Henry Quatre, in a pamphlet entitled *Ecclesiasticus*, which was burnt in Paris by the hands of the common executioner. Hated by all men, and trembling lest his life might fall a sacrifice to some one of the many hundreds he had vilified, he fled from place to place, and finally found an asylum in Padua, where he continued to linger out what must have been a miserable existence, to the ripe age of seventy-four. His memory, otherwise entitled to respect for his acquirements, is justly abhorred for his frantic attacks upon all the most eminent men of his age.

Jerome Cardan furnishes another instance of the futility of excessive learning as regards the power of man to know himself, to regulate his evil propensities, or to increase the general sum of earthly happiness. His self-conceit at least equaled that of the Scaligers. In his personal memoirs, or rather *Confessions*, in which he anticipated Rousseau, with more sincerity, perhaps, and with equal inconsistency, he tells such strange tales of himself, that it seems almost impossible for nature to have formed an amalgam so capriciously put together and ill-sorted. In religious notions he appears to have been compounded of superstition, deism, and paganism. He congratulates himself on not having a friend in the world; but says, that to fill up the void, he has an "attendant spirit," or genius, partly emanated from Saturn and partly from Mercury, who waited on him as the constant guide of his actions and teacher of his duties, and came whenever he was summoned. This gift of spirit-rapping must have been an heirloom in the family, for Cardan also tells us that his father once summoned up seven devils together, who all presented themselves in Greek costume, about forty years of age, some ruddy of complexion and others pale. After much cross-questioning, to which they made ready answers, he selected one, and bound him to his service for twenty-eight years. We are not informed as to whether he tied him to his dog's collar, as Cornelius Agrippa did, or to the pommel of his sword, after the example of Paracelsus.

Cardan junior professed also a profound belief in judicial astrology, which he carried to such an extent that, according to current tradition, he starved himself at Rome, in the seventy-fifth year of his age, that his horoscope, which he had drawn himself, might not be falsified. He was the offspring of illegitimate love. When born, his head was thickly covered with black, curling hair. Never was any person more remarkable for inequality of temperament than this very singular man, so singularly added to the living aggregate of humanity. His life was a series of odd adventures, which he committed to writing with so much freedom and simplicity, that it seems as if he had composed the history for no other purpose than to exhibit to the world an amazing instance that a person might be endowed with a gigantic genius, and yet be without a modicum of sense. He expatiates with equal candor on his good and bad qualities, and professes to be as proud of his evil propensities as of his virtuous inclinings—if, as appears doubtful, he had any glimmering visitations of the latter. He owns, with-

out scruple, that he was revengeful, envious, treacherous, a dealer in the black-art, a backbiter, a calumniator, and unreservedly addicted to all the foul and detestable excesses that can be imagined; yet, notwithstanding, as it might be thought, such a humiliating declaration, there was never, perhaps, an individual on better terms with himself. He writes thus:

"I have been admired and enthusiastically followed, not by single persons, but by nations; an almost infinite number of panegyrics, in prose and verse, have been composed to celebrate my fame. I was born to release the world from the manifold errors under which it has groaned for ages. What I have found out could not be discovered either by my predecessors or my cotemporaries; and that is the reason why those authors who write any thing worthy of being remembered, blush not to own that they are indebted to me for it. I have composed a book on the dialectic art, in which there is neither a superfluous letter nor one deficient. I finished it in seven days, which seems a prodigy. Yet, where is there a person to be found, who can boast of his having become master of this doctrine in a year? And he that shall comprehend it in that time, must appear to have been instructed by a familiar demon."

This is blowing his own trumpet with a vengeance. The well-filled storehouse of self-laudation can scarcely parallel such a blast.

Cardan's eccentricities might have set him down as a madman or a mountebank, but he was highly distinguished as a physician, a mathematician, a linguist, and a logician. In the two first branches of science he held professorships at Milan, Pavia, and Bologna; and all four require the exercise of vigorous and unclouded intellect. Even his great opponent, the elder Scaliger, who replied with constitutional spleen to Cardan's deistical treatise, *De Subtilitate*, admits that the author possessed a comprehensive, penetrating, and original mind. Yet was his credulity in trifling matters almost childish. He swallowed eagerly all the false fancies of the Cabalists, Rosicrucians, and Astrologers, but called in question the sacred doctrines of revelation. It might have been said of him, bating that he was not clerical, as Charles II. pronounced of Isaac Vossius, of Leyden, one of his canons of Windsor, who was skeptical on religious points, but easy of persuasion on all others: "Vossius is a strange fellow for a parson; he believes every thing except his Bible."

Cardan records of himself that his manner of walking the streets was so singular that observers pointed at him as a fool. Sometimes he assumed a funeral pace, as if absorbed in grief or meditation. He would then suddenly break into a trot, accompanied by extravagant gesticulations. In Bologna, his delight was to be drawn about in a strangely contrived vehicle with three wheels. When nature did not visit his body with pain, he would inflict suffering on himself, by biting his lips and pulling his fingers violently, until he forced tears from his eyes. His argument was that he thus moderated certain impetuous sallies of the mind, more insupportable than physical torture, and that this severe practice increased his enjoyment of health. Again, he says, that in his greatest paroxysms of mental anguish, he used to whip his legs with rods and bite his left arm; that it was a great relief to him to groan and weep, effects which sometimes no personal infliction could produce; that nothing gave him more intense pleasure than to talk of things that annoyed the whole company; that he spoke on all subjects as they came uppermost, without reference to fitness of time, place, or hearers; and that he was so addicted to games of chance, as to spend whole days and nights in them, to the great prejudice of his means and reputation, for he even staked his furniture and his wife's jewels. His wife was a mere nominal appendage, for they never met or associated together.

Cardan's pen was seldom quiescent. His works extend to ten folios, printed collectively in 1663. Notwithstanding the notoriety of his religious freedom, Pope Gregory XIII. made him his body-physician, and gave him a pension, which he enjoyed for seven years, until his death, in 1576. Of what use either to himself or to posterity was his *Rudis indigestaque moles*—his chaos of undigested learning? Not more than the equally unprofitable labors of William Prynne, which even exceeded those of Cardan in bulk, and are quite as unreadable. Cardan adopted as a motto, and inscribed over the door of his library—"*Tempus ager meus*"—time is my estate. Joseph Scaliger was wont to say: "My whole estate lies under my hat." The learned Sculter amplified the

notions of Cardan in these lines, which he also affixed to the portal of his study:

> "Amice, quisquis huc venis,
> Aut agitur paucis, aut abi,
> Aut me laborantem, adjuva."

Which may be paraphrased in English as follows:

> "One of three things I request,
> If, friend, my studies you molest:
> Be brief in what you say,
> Or take yourself away,
> Or aid me, if you stay."

The ponderous tones of the Scaligers, of Scioppius, and Cardan, stand in imposing file on the shelves of the Vatican, the Bodleian, and a few collegiate libraries, whence they are seldom disturbed since the days of old Burton, except by some mole of a book-worm who delights to grub in dark places. They are voluminous rather than luminous, as Sheridan amended his reported compliment to Gibbon, introduced in the celebrated Begum speech. They wrote in Latin, and affected obscurity in style and thought — a strange bias, but one which has its admirers, predecessors, and followers. A simple reasoner would say, knowledge ceases to be useful when it becomes unintelligible; but he is at once knocked down with a contradiction; as Thwackum, in controversy with Square, saddled his opponent with a judgment, whenever he advanced a suspicious theory. We have heard more than one say: "I like a book I can not understand." Talleyrand obtained credit for originality when he merely revived the dictum of an ancient: "Language was given to man to conceal his thoughts." We, on the contrary, are of opinion with the old Roman who says: "*Erit ergo etiam obscurior, quo quisque deterior.*" There can be no greater error than obscurity, since the object with which we speak or write is to make ourselves understood. Yet we are told that in the time of Livy there was a rhetorician in Rome who so advocated obscurity that he made his scholars cancel those passages in his works which were easy of interpretation. The praise he desired for the eloquence of his school was that men should say—"I do not comprehend the smallest portion of it."

Lycophron, one of the seven Greek poets called the Pleiades, who flourished in the reign of Ptolomy Philadelphus, lived A.D. 220, was surnmaned *Tenebrosus*, from the darkness of his only extant work, a poem called *The Prophecies of Cassandra*. He announced publicly that he would hang himself if he found a person who could understand it. He succeeded to his utmost wishes, and escaped the self-denounced penalty of the rope. This production proved the stumbling-block of grammarians, scholiasts, and commentators for ages, and is at this day as inexplicable as when it first appeared. Jacob Boehmen declared that the mysteries of his *Aurora*, published in 1612, are intended to be and will remain incomprehensible to all common mortals who are not gifted with special inspiration.

The following anecdote supplies an apposite illustration that in the business of life plain words are preferable to obscure ones. A pedantic old gentleman, odd and peculiar in his habits, happened to want a footman, and requested his nephew to find him one. The nephew thought his own valet eligible for the place, and desired him to apply for it. The man was attached to his young master, and left him reluctantly; but believing that the change would be for his advantage, repaired to the uncle, who being confident that his nephew would not recommend an improper person, merely asked him if he understood *sequences*. John was puzzled. He had never heard the word before, and it did not sound like any thing belonging to table service, brushing clothes, or cleaning boots. He was as much abroad as the sailor in *Black-eyed Susan*, who, having deposed on William's court-martial to his messmate's excellence as a seaman, is next asked what he can say of his *moral* character. "Moral character, your honor? Why, he plays the fiddle like an angel!" John, after similar hesitation, replied: "I am not quite sure, sir, that I understand you; but if you will be pleased to explain yourself, I hope I shall be able to give you satisfaction." "I mean," said his proposed new master, "that when I order you to lay the cloth, you should comprehend thereby every thing connected with it, such as the knives, forks, salt, spoons, etc.; and so upon all occasions, not to do only what you are told in so many specific words, but to let your mind take in the whole range of *connecting appurtenances*, *dependencies*, *sequences*, and *consequences* of one thing upon another."

John assured him that he would do his best, and had no doubt of pleasing him. Accordingly he was hired, and for some time they agreed perfectly. At last, his master finding himself one morning suddenly ill, ordered John to fetch a nurse as soon as possible. Instead of returning with all speed, he was absent for several hours, and when at last he presented himself, received a severe reprimand for his delay, when he had been sent on business that required dispatch. John waited until his master's anger had abated a little, and then proceeded to justify his conduct in the following manner: "That he went and found the nurse, who was below; thinking an apothecary might be a *connecting appurtenance* to a nurse, he had brought one, who was also below; that knowing a doctor was usually a *dependence* on an apothecary, he had likewise fetched a physician, who was in waiting; a surgeon, he said, was often a *sequence* to a doctor, and an undertaker the *consequence* of all; he had, therefore, brought them altogether, and hoped he had thoroughly understood and executed his orders." The story winds up by saying that the old gentleman was so much pleased with the humor of his man, that he added a codicil to his will by which he left him handsome legacy.

II. GREAT EATERS.

"Some men are born to feast, and not to fight,
Whose sluggish minds, e'en in fair honor's field,
Still on their dinner turn."—JOANNA BAILLIE.

From the mind to the body, "*facilis descensus Averni*;" the gulf is wide and deteriorating, from the highest of intellectual adornments to the most groveling of physical propensities. But one extreme naturally suggests another, and thus the most opposite ideas mingle in association.

The heroes of the Trojan war had prodigious appetites. We find their table-feats more than once commemorated in the Iliad. Those were days of thrift, not waste; and it is not to be supposed that much more was laid on the table than the guests were expected to eat. When we are told that after the duel of the son of Telamon with Hector, and when dinner came on,

"The king himself,* an honorary sign,
Before great Ajax placed the mighty chine"—

it was clearly intended that the champion should appropriate the entire dish to himself. Several centuries later, Milo of Crotona, who flourished five hundred years before the Christian era, killed a bullock of four years old with one blow of his fist, and ate up the entire animal in a single day. Aglais, a dancer, (daughter of Megacles,) would devour, for her supper, ten pounds of meat, with twelve loaves, and drink several quarts of wine. (See *Cæl. Rhod.* L. 15, c. 19.) We have no record as to whether she exercised her vocation soon after this inordinate meal. Clio, not the muse of history, but a Grecian woman of the middle class, coëval with Aglais, challenged all the men to eat and drink, and never met her match. The family of the Apicii were as celebrated in old Rome for their gluttony, as the Decii, Fabii, and Scipios for their patriotic devotion. There were three of the name, but Apicius Cœlius No. 2 was the most famous: he wrote a book, still extant, *De Arte Conquinariâ*, on the pleasures of, and the excitements to eating, and well worthy the attention of gastronomists. It is quoted with eulogium in the *Almanac des Gourmands*, and contains some good "peptic precepts." This belly-god hanged himself because his steward reported that he had only eighty thousand pounds sterling left, (*centies sestertium*,) which he calculated would only suffice for one supper. According to that curious and most minute compiler, Dr. Arbuthnot, he had spent on his kitchen alone £807,291 13s. 4d. But with all his epicurism and reckless expense in the indulgence of that propensity, he was contented to eat stale sandwich oysters at Rome, instead of traveling to Britain to enjoy them fresh. In this taste he was followed by George II., to supply whose table oysters verging on decomposition were advertised for at a high premium.

It is recorded of the Emperor Claudius Albinus, who reigned for a short period, A.D. 198, that he ate one day for his breakfast five hundred figs, one hundred peaches, ten melons, one hundred fig-peckers, forty Adriatic oysters, (they are nearly a foot in diameter,) and a large supplement of grapes. It was well for him that cholera was unknown in those days. We

* Agamemnon.

may think that after such a dose of fruit, he might have called out with Mad Tom in *Lear*: "Hopdance cries within me for three white herrings." A certain Phago, in presence of the Emperor Aurelian, devoured a whole sheep, a wild boar, a young pig, with five hundred loaves, and wine in proportion. Theodoret, a Greek father of the early part of the fifth century, tells of a Syrian woman, unnamed, who consumed daily thirty pullets, and was never known to be satisfied. It appears, however, that Macedonius cured her by making her drink the holy water which had been sanctified according to rule.

In the year of our Lord 235, the Roman Emperor Maximin, originally a Thracian peasant, (we must remember he was a son of Anak, being eight feet high,) dispatched daily at his dinner forty pounds of beef and nineteen bottles of wine. He expanded to such a size, in consequence, that his wife's bracelets served him for rings to his fingers.

But all these cases of *bulimia* sink into nothing when paralleled with the disease of the Emperor Vitellius. We learn from Suetonius, and other reliable authorities, that all the roads in Italy, and the two seas, Mediterranean and Adriatic, were covered with emissaries solely employed in providing the most exquisite meats and the choicest fish for his ravenous symposia. He made four meals per diem, sometimes taking an emetic between each, that he might more speedily unload his stomach, and be ready for a fresh onslaught. He was so insatiable, that during the pontifical sacrifices he was often seen to snatch the animal's entrails from the fire half-baked, and devour them in presence of the assembled crowd. He invited himself to his friends' houses, who trembled when the imperial visit was announced, for he made them entertain him so sumptuously, that ruin often ensued. A single feast swallowed up a year's rental. His brother, Lucius Vitellius, once treated him with two thousand fishes, and seven thousand singing-birds, all exquisitely delicate and scarce. The expense of his table amounted to seven millions sterling in the space of four months. He had always ready in his larder thousands of pheasants' livers, tongues of fishes, peacocks' brains, and the tails of lampreys.

The moderns can not quite reach the mark of the ancients, but they have nevertheless exhibited some memorable feats in mastication. Furetiere, in the *Furetiana*, p. 8, says that he saw a man eat, without pausing to take breath, a loin of veal, a capon, and two woodcocks, with four pounds of bread. In 1812, an account appeared in the papers of a countryman who, for a bet, devoured at a meal, by measurement, as much tripe as would make him a jacket. Another, not long after, beat him by a waistcoat and nether integuments of the same material. We have somewhere read of a Capuchin friar, who ate, at one sitting, twelve omelets, each containing twelve eggs. The last Duke of Montague had a tenant, a Scotchman, whose manducatory powers were unrivaled. He challenged all England to a contest. A Norfolk bumpkin entered the lists, and was ignominiously beaten. The Duke was at dinner when his special messenger arrived with news of the issue. He ordered him in at once, and demanded particulars. "They began," said the envoy, "on two equal rounds of beef, one of which each dispatched in less than two hours. They then took two large legs of mutton, and in the middle of his the Englishman broke down and gave in." "Bravo!" exclaimed the Duke. "Our man then," proudly added the ambassador, "ate a goose!"

Voltaire relates that Charles Gustavus of Sweden, the successor of Queen Christina, was engaged in the siege of Prague, when a peasant of most appalling aspect, with tusks like a wild boar, desired admittance to his tent, and, being allowed entrance, offered, by way of amusing the King and his suite, to devour a whole hog, weighing two hundred-weight. The old General Königsmarck, who stood by the King's side, and who, soldier as he was, and fearless before the enemy, still retained some of the prejudices of his childhood, hinted to his royal master that the boor ought to be burnt as a sorcerer. "Sir," said the fellow, irritated at the suggestion, "if your Majesty will but make that little old gentleman take off his sword and spurs, I will eat him in your presence before I begin the pig." General Königsmarck, who at the head of his brigade had performed wonders against the Austrians, and was looked upon as one of the bravest men of the age, could not face this proposal, especially as it was accompanied by a most hideous and preternatural expansion of the frightful an-

thropophagus's jaws. Without uttering a word, he wheeled suddenly round, ran out of the tent, and thought himself unsafe until he reached his own quarters, where he double-locked himself in for four-and-twenty hours, before he could shake off the panic which had so completely unmanned him.

From the London Eclectic.

MODERN PHILOSOPHY.

Among our numerous histories of moral and metaphysical science we must always assign a foremost place to that of Mr. Maurice, of which we have received now the last volume: *Modern Philosophy; or, a Treatise of Moral and Metaphysical Philosophy, from the Fourteenth Century to the French Revolution, with a Glimpse into the Nineteenth Century. By the Rev. Frederick Denison Maurice, M.A.* (Griffin, Bohn & Co.) We had intended devoting a much larger space to a notice of this volume. Its predecessors of the same series will be known to our readers, and we most heartily commend it to the notice and the warm reception of students, especially young students. The scholar and the large-hearted man—rare combination!—are visible on every page. There is caution and conscientiousness visible throughout; nor do we hesitate to say that of all histories of mental science this is the most interesting. A large, bulky volume, of nearly seven hundred pages, it is as fascinating as a history by Macaulay, or a novel by Bulwer. The reason of this is obvious: all the opinions and wordy wars of the ancient schoolmen pass through the mental history of the historian himself. Evidently enough he is not contented with reading their books, and quoting from them in illustration of their dogmas; he lives himself in the moral region and latitude of their thought or opinion; and this has rarely been done. It is common enough now for the national historian to make himself acquainted with all the typographic circumstances which can throw light upon an event. He acquaints himself with all the relations of the times. Even the dress of his heroes is a necessary part of the study of historical costume; but of the accoutrements and surroundings of the great masters, and lords, and warriors in dialectic science, historians have been more careless. And how remarkably this is the case in all studies of Church history, in which we find one historian giving the stream of dogmas and opinions, and theological and metaphysical distinctions, and another the stream of objective events and the procession of men, characters, and martyrs. It has been so with the study of mental and moral science: a cold history of abstract ideas, separated from forms. From this charge the history before us must be exempted. It would not be possible for the warm, loving human heart of Mr. Maurice, whose very errors are all related to the intense real affectionateness of his nature, to write thus. We may confess—not being *Saturday Reviewers* or *Athenæum* critics, all of whom are at once ubiquitous and omniscient, having an unction to know all things—there are many of these lords of thought referred to, and summarily and distinctly characterized by Mr. Maurice, whom we only know through such works as the present. We may mention the works of William of Occam, Gerson, Nocolas von Cusa, Savonarola, and Giordano Bruno, and even Benedict Spinoza; but we believe in this volume the thoughts of these men are given with a rare and lucid fidelity. We have always thought Mr. Maurice singularly clear when describing or analyzing opinions of past ages. When he comes into the arena of polemics, we can not but think that a strange fit of redundancy comes over his pen, and a strange haze of mystical indefiniteness vails his pages. His literary charac-

ter would always gain by a greater sharpness and point in his pen; but from those which many would regard as the faults of his style, or his thought, the volume before us is most happily free. It is a wonderful history; an amazing spectacle; the long-continued battle in the kingdom of abstractions, the war of words against things, and things against words, incessantly renewed; constantly from age to age changing the battle-field from Oxford to Paris, from Florence to Wittemberg. London never had a university, and never led on in this great war of abstract thought and opinion; and still in our own time we find the contest of Nominalist and Realist renewing and renewed. Ordinary minds, and even minds we would not venture to call ordinary, are unable to enter into these disputes, can not live in the arena where disputes go on touching pure thought, and being; yet, to the disputants, all was most real —this seeking for the ground of the soul, analyzing and dissecting spirits, in search of the organ by which it may be possible to apprehend the divinest truths; and, indeed, it is not possible to study long in these matters with a thoughtful mind, without becoming fascinated by them. It is interesting to notice how long, how patiently, how painfully men studied before they discovered truths which now we handle like our daily bread. It is with things spiritual and mental, as with the worlds of science and mechanism: we avail ourselves of the past ages, and the pains of the past become the happiness of the present. Simple propositions, now instantly received as truisms, like all truisms, even needed to be discovered to be such. It was not always self-evident that consciousness is deeper than sensation. We believe Mr. Maurice is quite correct in his supposition, that "there is a growing belief, a feeling among the rich and prosperous, that the invisible world has no interest for men in a refined state of civilization." It is mournfully true; but as this belief obtains a hold, we believe it certain that the springs of every noble sentiment will dry up, and leave the man a mummy, and the world a coffin.

We trust that this book will be a corrective to the singularly able *Biographical History of Philosophy*, by Mr. George Henry Lewes, whose very first sentences express a doctrine in harmony with Mr. Maurice's accusation against the age: "Philosophy is everywhere in Europe fallen into discredit — the movement of Philosophy has been circular, the movement of Science has been linear." We think the History of Mr. Maurice tells another story. Being a Christian, he believes in a world whose strata lie beyond the pickaxes and spades of science; and, perhaps, if Mr. Lewes thought as much upon his own nature as upon the physiology of bodies, he might see some reason to believe so too. The men who have made these questions the topics of their study really believed, and saw evidence for the belief, in the identity and individuality of soul: its life was something more to them than a complication and happening of physiological organization. The reader may take one name, one book, from the multitude of metaphysical treatises, and it may read even like the delirious wanderings of a sleep-walker to those who settle all these things in the surgery. But this method of delirium pursued and persisted in from age to age—this long catalogue of persons to whom truth was interesting and absorbing for its own sake; to whom the problem of pure being could only present a solution from its subjective side and aspect—why, at last they become the most overwhelming proof for the existence of a being which physiological science can not touch, and a kind of truth which physiological science can not handle. Metaphysics is not the study to which ordinary minds devote themselves much; its advantages are not obvious. Science has very obvious advantages. In this the two are like those obvious things, pudding and Euclid, to a schoolboy. Pudding gets far more faith; still, Euclid is not without advantage to the mind, although left by pudding and Mr. G. H. Lewes so far in the rear. And thus, to our readers, especially students, we again commend this volume —volumes, indeed—of Mr. Maurice, as by far the best, most comprehensive and safe history of mental and moral science with which we are acquainted. He prints the well-known prayer of Malebranch in his notice of the great French philosopher. It is worthy to be commended to the deep pondering and repetition of all our readers:

"O Eternal Wisdom! I am not a light to myself; and the bodies which surround me can not illuminate me: the superior intelligences themselves, seeing that they contain not in themselves the reason which makes them wise, can not communicate that reason to my mind, Thou alone art the Light of angels and of men; thou alone art the universal Reason to all minds.

Thou art the very Wisdom of the Father—Wisdom eternal, unchangeable, necessary, who makest wise creatures, and even, though in a manner altogether different, the Creator. O thou, my true and only Master, show thyself to me! Cause me to see light in thy light. I appeal only to thee. I would consult none but thee. Speak, thou Eternal Word, the Word of the Father, that has been always uttered, that utters itself now, that will utter itself forever. Oh! speak, and so loudly that I may hear thee through all the confused noises which my senses and my passions are continually making in my soul. But O Jesus! I beseech thee to speak in me only for thy glory, and to make me know only thy greatness, for in thee are hidden all the treasures of the wisdom and knowledge of God. He who knoweth thee knoweth the Father, and he who knoweth thee and the Father is perfectly blessed. Cause me, then, to know, O Jesus! what thou art, and how all things subsist in thee. Penetrate my mind with the brightness of thy glory; consume my heart with the fire of thy love. Grant me in this work, which I compose only for thy glory, expressions clear and true, full of life and soul; expressions worthy of thee, and such as shall increase in me, and in those who share my meditations, the knowledge of thy greatness, the sense of thy mercies."

From the Edinburgh Review.

MEMOIRS OF RICHARD THE THIRD.*

Rulers with doubtful titles are commonly anxious to rule well; and Richard laid himself out from the commencement of his reign to found a reputation for moderation, equity, and forgiveness of private injuries. "The day after his acceptance of the crown," says More, "he went to Westminster, sat himself down in the Court of King's Bench, made a very gracious speech to the Assembly there present, and promised them halcyon days. He ordered one Hog, whom he hated, and who was fled to sanctuary for fear of him, to be brought before him, took him by the hand, and spoke favorably to him, which the multitude thought was a token of his clemency, and the wise men of his vanity."

He formally enjoined the great barons to see to the equal administration of justice in their provinces; and a cotemporary sketch of his progresses speaks of "his lords and judges in every place, sitting determining the complaints of poor folks, with due punition of offenders against the laws." In a circular letter to the bishops, he expresses his fervent desire for the suppression of vice; "and this perfectly followed and put in execution by persons of high estate, preëminence, and dignity, induces persons of lower degree to take thereof example, and to insure the same." His legislative measures are admitted to have been valuable additions to the Statute Book.

Edward IV. was always in want of money, and was in the habit of personally appealing to his wealthiest subjects for contributions. "And here," says the chronicler, "I will not let passe a prettie conceipt that happened in this gathering, in which you shall not only note the humilitie of a king, but more the fantasie of a woman. King Edward had called before him a widow much abounding in substance, and no lesse growne in years, of whom he merily demanded, what she gladly would give him toward his great charges. By my trothe, quoth she, for thy lovely countenance thou shalt have even twentie pounds. The King looking scarce for the half of that sum, thanked her, and lovinglie kissed her. Whether the flavor of his breath did so comfort her stomach, or she esteemed the kiss of a king so precious a jewele, she swore incontinentlie, that he should have twentie pounds more, which she with the same will paied that she offered it."* Richard went on an opposite tack. When the ci-

* Concluded from page 364.

* Holingshed, vol. iii. p. 33.

tizens and others offered him a benevolence, he refused it, saying: "I would rather have your hearts than your money."

He disforested a large tract of country at Witchwood, which his brother had cleared for deer, and showed at the same time his wish to promote all manly and popular amusements by liberal grants and allowances to the masters of his hounds and hawks. There is, moreover, extant a mandate to all mayors and sheriffs not to vex or molest John Brown, "our master-guider and ruler of all our bears and apes to us appertaining." He is commended by cotemporaries for his encouragement of architecture; and the commendation is justified by a list of the structures which he completed or improved. His love of music is inferred from the extreme measures he adopted for its gratification. Turner quotes a warrant "empowering one of the gentlemen of his chapel to take and seize for the King's use, all such singing men and children, expert in the science of music, as he could find and think able to do the King service, in all places in the kingdom, whether cathedrals, colleges, chapels, monasteries, or any other franchised places except Windsor." He was visited by minstrels from foreign countries, and he gave annuities to several professors of the gentle science; "and also," adds Turner, "perhaps from his fondness for their sonorous state music, to several trumpeters." His example, therefore, indirectly refutes the famous Shakspearian theory—"The man that has no music in his soul"—which Steevens contends is fit only to supply the vacant fiddler with something to say in praise of his idle calling. If Richard was an innate villain, he is at all events a proof that one who is "moved with concord of sweet sounds" may be as "fit for treasons, stratagems, and spoils" as one who can not distinguish "Rule Britannia" from "Nancy Dawson." Mr. Jesse will have it that Richard's nature was originally a compassionate one; and he appeals to the pensions considerately bestowed by him on the widows of his enemies, Lady Hastings, Lady Rivers, Lady Oxford, and the Duchess of Buckingham.

A few months after the death of the young princes, the clergy in convocation assembled drew up and presented a petition to him, complaining that churchmen were cruelly, grievously, and daily troubled, vexed, indicted, and arrested; and prayed for relief, "seeing your most noble and blessed disposition in all other things." Probably this is a precedent for the revival of Convocation in all its glory, on which the Bishop of Oxford and the other right reverend upholders of that venerated institution will not be anxious to rely.

Sir Thomas More states that Richard, in the hight of his prosperity, could never silence the whispers of his conscience, and could not lie quiet in his bed for dreams and visions. So Anne is made to complain:

> "For never yet one hour in his bed
> Did I enjoy the golden dew of sleep;
> But with his tim'rous dreams was still awakened."

We suspect that the instability of his position had more to do with his uneasy nights than the sense of guilt; for men of his temper, habituated to deeds of blood and projects of aggrandizement from boyhood, are little subject to remorse. He knew that the majority of the great nobles were plotting round him, and that it was beyond his power to satisfy the rapacity of all who had helped him to the throne. The Percys turned against Henry IV. on the plea of his ingratitude. Warwick changed sides because he was personally slighted, or disappointed; and Buckingham, in a nearly analogous position, was pretty sure to try whether he could not pull down what he had so largely contributed to set up. His motives have given rise to much ingenious speculation, and were probably mixed. He may (as Shakspeare takes for granted) have been refused the promised earldom and domains of Hereford, although a formal grant of them has been discovered amongst some old records, or, being of the blood-royal, he might have hoped to get the crown for himself. He told Morton that he could no longer abide the sight of Richard after the death of "the two young innocents." He accordingly transferred his allegiance to the Earl of Richmond; who, when the arrangements for a simultaneous rising in several parts of England were complete, set sail from St. Malo with a force computed at five thousand soldiers. His friends keeping faith, the insurrection assumed formidable proportions in Devonshire, Wiltshire, Berkshire, and Kent. Buckingham had collected a large force in Wales. But it was impossible to elude Richard's watchfulness; and fortune had

not yet deserted him. Richmond's fleet was driven back by a tempest, and Buckingham was stopped by an inundation of the Severn and the neighboring rivers, so terrible, that, for a century afterward, it was spoken of as Buckingham's Great Water. The result is succinctly told by Shakspeare:

"*Mess.* My lord, the army of great Buckingham—
"*K. Rich.* Out on ye, owls! nothing but songs of death.
[*He strikes him.*
"*Mess.* The news I have to tell your majesty
Is—that by sudden floods and fall of waters
Buckingham's army is dispersed and scattered;
And he himself wandered away alone,
No man knows whither."

After another messenger has delivered an equally cheering report,

"*Enter* CATESBY.
"My liege, the Duke of Buckingham is taken.
That's the best news.—That the Earl of Richmond
Is with a mighty power landed at Milford,
Is colder tidings, yet it must be told.
"*King.* Away toward Salisbury; while we reason here
A royal battle might be won and lost.
Some one take order Buckingham be brought
To Salisbury: the rest march on with me."

Many readers will be as much puzzled by this passage as was the Drury Lane audience on the night when John Philip Kemble, feeling ill, left out the line* which provoked a nightly conflict with the pit. The point or claptrap which they miss was interpolated by Cibber in what, with a few subsequent changes, is still the acting edition of the play:

"*Enter* CATESBY.
"My liege, the Duke of Buckingham is taken.
"*Rich.* Off with his head: so much for Buckingham."

This is the popular reading, and a story is current in theatrical circles of the ludicrous confusion of a celebrated actor who piqued himself on the delivery of the line given to Richard, when the Catesby of the evening thus varied his part:

"My liege, the Duke of Buckingham is taken,
And, without orders, they've cut off his head."

Cibber's Richard is printed amongst his works under the title of *The Tragical History of King Richard III. as it is now acted at the Theater Royal, Drury Lane. Altered from Shakspeare, by Mr. Cibber. London. Printed in the year* 1721. Indignation is naturally excited by the bare notion of Shakspeare corrected by Cibber, and we are prepared to hear of "gilding refined gold, painting the lily," etc. Yet the best critics are agreed that the success of the drama as an acting play is mainly owing to him. Their concurrent estimate is thus expressed by Steevens: "The hero, the lover, the statesman, the buffoon, the hypocrite, the hardened and repenting sinner, etc., are to be found within its compass. No wonder, therefore, that the discriminating powers of a Burbage, a Garrick, and a Henderson, [a Kean and a Macready,] should at different periods have given it a popularity beyond other dramas of the same author. Yet the favor with which this tragedy is now received, must also in in some measure be imputed to Mr. Cibber's reformation of it, which, generally considered, is judicious." No modern audience, we agree with him, would patiently listen to the narrative of Clarence's dream, his expostulation with the murderers, the prattle of his children, the soliloquy of the scrivener, the tedious dialogue of the citizens, the ravings of Margaret, the vehement interchange of curses and invectives with which whole scenes are stuffed, or the repeated progresses to execution. In fact, Shakspeare's ordinary fertility of resource is frequently belied by this play; for Clarence's dream (in which the betrayed Warwick and the murdered of Tewkesbury appear to him) foreshadows Richard's; and the scene in which he extorts the reluctant consent of Elizabeth,

"Relenting fool, and shallow, changing woman,"

too closely resembles that in which he woos and wins Anne. His new marriage project is thus broached to his convenient tool, Catesby:

"I say again, give out
That Anne, my queen, is sick and like to die.
About it, for it stands me much upon
To stop all hopes, whose growth may damage me.
[*Exit* CATESBY.

* "For this be sure to-night thou shalt have aches." The story is told by Scott, *Prose Works*, vol. xx. p. 188.

I must be married to my brother's daughter,
Or else my kingdom stands on brittle glass.
Murder her brothers, and then marry her!
Uncertain way of gain!"

It is one of the strangest stories of these strange times that the young and lovely Princess Elizabeth was in love with the wicked crook-backed uncle who had murdered her brothers; and that, in declared rivalry with her aunt, she appeared at the Christmas festivals of 1484 in royal robes exactly similar to those of the Queen, who died the March following of a languishing distemper. His tongue must have surpassed that of the original tempter, or the great ladies of those days must have had an uncommon share of their sex's weakness, if one after the other consented to overlook notorious crime and suppress natural horror in this fashion; for it would seem that the Princess's inclinations were sanctioned by her mother, the widow of Edward IV., who, if possible, had still stronger grounds of abhorrence. Another curious sign of the times is the oath by which he induced his nieces to leave the sanctuary and trust themselves in his power. This document, dated March 1st, 1484, begins thus:

"I, Richard, by the grace of God king, etc, in the presence of you, my lords spiritual and temporal, and you, mayor and aldermen of my city of London, promise and swear, *verbo regio*, upon these Holy Evangelists of God, by me personally touched, that if the daughters of Dame Elizabeth Gray, late calling herself Queen of England; that is, to wit, Elizabeth, Cecily, Anne, Katherine, and Bridget, will come unto me out of the sanctuary at Westminster, and be guided, ruled, and demeaned after me, then I shall see that they shall be in surety of their lives, and also not suffer any manner of hurt by any manner of person or persons, to them or any of them, on their bodies and persons, to be done by way of ravishment or defouling, contrary to their will."

He further swears to marry them to gentlemen by birth, to endow each of them to the amount of two hundred marks *per annum*, and to discredit any reports to their disadvantage, till they shall have had opportunity for lawful defense and answer.

There is good reason to believe that Richard continued warmly attached to his early love and wedded wife, Anne; who never recovered the death of their son, and languished, says Buck, "in weakness and extremity of sorrow, until she seemed rather to overtake death, than death her." Richard might easily have procured a dispensation to marry his niece, had he been so minded; but the project was never carried further than was required to break off or delay her marriage with her future husband, Richmond; and when this purpose had been answered, he publicly assured the citizens of London that he never so much as contemplated the union.

The shortness of his reign favors the notion that the nation, exasperated beyond endurance by his villainies, rose and threw him off like an incubus. But nothing of the kind occurred. The people at large were too much inured to scenes of blood and acts of cruelty, to be shocked by them. They cared little or nothing whether a few princes or lords, more or less, were put to death, so long as they were not fleeced by the tax-gatherer or oppressed by a local tyrant; and Richard, like Cromwell at a later period, took good care that there should be no usurped or abused authority besides his own. He was not weighed in the balance and found wanting, till two discontented nobles, the Stanleys, threw their whole weight into the opposing scale. The numerical inferiority of Richmond's army is a conclusive proof that his cause was not a preëminently popular one. After landing at Milford Haven, (August 6th, 1485,) he proceeded by a circuitous route through Wales, in the hope, which was not disappointed, of profiting by his Welsh blood and connections. On arriving at Shrewsbury, the gates, after a short parley, were opened to him by Mitton, the sheriff, who had sworn fidelity to Richard, but fortunately discovered a mode of breaking his oath without hurt to his conscience. He had sworn that Richmond should go over his belly before entering the tower, meaning of course that he would die in its defense, "soe when they entered, the sayd Mitton lay alonge the grounde wyth his belly uppwards, and soe the said Earle stepped over hym and saved his othe."

On Tuesday, August 16th, Richard quitted Nottingham at the head of all the forces he could collect, and entered Liecester the same evening a little after sunset. He took up his quarters in a large half-timber house, standing within living memory; and slept in a bed, the remains of which were recently in existence. It had a false bottom, in which a large sum of money

could be concealed, and did duty as a military chest. He passed the night of the seventeenth at Elmsthorp, eleven miles from Leicester; and on the eighteenth pitched his camp at a place called the Bradshaws, a mile and a half from Bosworth Field. Richmond advanced by Lichfield and Tamworth to Atherstone, close to the Field; where he arrived on the twentieth, after having held a private council with the Stanleys on the way. Judging from the result, their plan is concluded to have been that, whilst Richmond marched directly to the field, Lord Stanley should take up a position on the right, and Sir William on the left, so that, when the four armies were marshaled, they would form a hollow square; the two brothers to remain neuter unless their aid should prove indispensable. There were good reasons for this saving clause; for Lord Strange, Lord Stanley's eldest son, was a hostage in the hands of Richard; and though the usurper might be defeated, it did not follow that he would be killed, or lose all future chance of taking full vengeance on false friends. According to Hutton's estimate, Richard brought into the field twelve thousand men, Richmond more than seven, Lord Stanley five, and Sir William Stanley three. The same impartial and well-informed writer succinctly sums up the respective merits and pretensions of the rivals: "Were I allowed to treat royalty with plainness, Richard was an accomplished rascal, and Henry not one jot better. Which had the greatest right to the crown, is no part of the argument; neither of them had any. Perhaps their chief difference of character consisted in Richard's murdering two men for Henry's one; but as a small counter-balance, Richard had some excellencies, to which the other was a stranger."

The powers of upper air may therefore be supposed to have remained neuter, and each of the combatants passed probably an equally agitated night. We learn from an anecdote that Richard had lost nothing of his vigilance or unrelenting sternness. Going the rounds he found a sentinel asleep, and stabbed him, with the remark: "I found him asleep, and have left him as I found him." For summary administration of martial law, this beats Frederick the Great's famous postscript to the subaltern's letter to his wife.

The influence of omens on the English of all classes is mentioned by Philip de Commines, and Richard is reported to have been peculiarly subject to it. "During his abode at Exeter," says Holingshed, "he went about the citie, and viewed the seat of the same, and at length he came to the castle; and when he understood that it was called Rugemont, suddenlie he fell into a dumpe, and (as one astonied) said: 'Well, I see my daies be not long.' He spake this of a prophecy told him that when he came once to Richmond, he should not live long after." He had more rational cause for alarm when Jockey of Norfolk produced the doggerel warning found in his tent, for it clearly indicated the desertion and treachery that were about to prove fatal to him.

Shakspeare's representation of the battle is unaccountably tame, for he has made little or no use of the many stirring episodes and incidents supplied by the chroniclers. Early in the morning, Sir Robert Brakenbury delivered this message to Lord Stanley: "My lord, the King salutes you, and commands your immediate attendance with your bands, or, by God, your son shall instantly die." About the same time, Sir Reginald Bray came with a pressing message from Richmond. Stanley replied to Brakenbury: "If the King stains his honor with the blood of my son, I have more; but why should he suffer? I have not lifted a hand against him. I will come at a convenient time." When this answer was brought to Richard, he exclaimed: "This is a false pretense. He is a traitor, and young Strange shall die. Catesby, see to it." Strange was brought forth, and the executioner was getting ready the ax and the block, when Lord Ferrers of Chartley warmly remonstrated, and extorted a reprieve, mainly by urging that Lord Stanley might be still undecided. This is rather weakly rendered by—

"Send out a pursuivant at arms
To Stanley's regiment; bid him bring his power
Before sun rising, lest his son George fall
Into the blind care of eternal night.

. . . . . .

What says Lord Stanley? Will he bring his power?
"*Mess.* My lord, he doth deny to come.
"*Rich.* Off instantly with his son George's head.
"*Nor.* My lord, the enemy has passed the marsh:
After the battle let George Stanley die."

The vanguard of Richard's army was

commanded by the Duke of Norfolk; the center and main body by the King himself, who rode at their head, mounted on his celebrated milk-white steed—

"Saddle White Surrey for the field to-morrow"—

and arrayed in the splendid suit of armor which he had worn at Tewkesbury. Like Henry V. at Agincourt, he wore a golden crown, not (as Hutton takes care to tell us) as a man would wear a hat or cap, but by way of crest over his helmet, instead of the grinning boar's head in which Sir E. Bulwer Lytton portrays him scattering dismay at Barnet. Richmond, too, bore himself gallantly, and rode through the ranks, marshaling and encouraging his men, arrayed in complete armor, but unhelmeted. His vanguard, commanded by the Earl of Oxford, began the battle by crossing the low ground toward the elevated position where Richard prudently waited the attack. "The trumpets blew, and the soldiers shouted, and the King's archers courageously let fly their arrows. The Earl's bowmen stood not still, but paid them home again; and the terrible shot once passed, the armies joined, and came to hand-strokes."* The leaders of those days deemed it a point of honor to fight hand to hand, if possible, and Oxford and Norfolk managed to engage in a personal encounter, which would form a fitting subject for an Ariosto or a Scott. After shivering their spears on each other's shields or breastplates, they fell to with their swords. Oxford, wounded in the arm by a blow which glanced from his crest, returned it by one which hewed off the vizor of Norfolk's helmet, leaving the face bare; and then, disdaining to follow up the advantage, drew back, when an arrow from an unknown hand pierced the Duke's brain. Surrey, hurrying up to assist or avenge his father, was surrounded and overpowered by Sir Gilbert Talbot and Sir John Savage, who commanded on the right and left for Richmond:

"Young Howard single with an army fights;
When, moved with pity, two renowned knights,
Strong Clarendon and valiant Conyers, try
To rescue him, in which attempt they die.
Now Surrey, fainting, scarce his sword can hold,
Which made a common soldier grow so bold,
To lay rude hands upon that noble flower,
Which he disdaining—anger gives him power—
Erects his weapon with a nimble round,
And sends the peasant's arm to kiss the ground."*

If we may credit tradition or the chroniclers, all this was literally true. When completely exhausted, Surrey presented the hilt of his sword to Talbot, whom he requested to take his life, and save him from dying by an ignoble hand. He lived to be the Surrey of Flodden Field, and the worthy transmitter of "all the blood of all the Howards."

Hutton contends that, although Norfolk had fallen and Lord Stanley had closed up whilst the vanguard were engaged, no decisive advantage had been gained, when Richard made that renowned charge, which historians describe as the last effort of despair. He was bringing up his main body when intelligence reached him that Richmond was posted behind the hill with a slender attendance. His plan was formed on the instant; nor, although fiery courage or burning hate might have suggested it, was it ill-judged or reckless. Three fourths of the combatants, if we include the Stanleys, were ready to side with the strongest. Richmond's army, without Richmond, was a rope of sand. His fall would be the signal for a general scattering or a feigned renewal of hollow allegiance to the conqueror. Neither did the execution of the proposed *coup de main* betoken a sudden impulse inconsiderately acted upon. Richard rode out at the right flank of his army, and ascended a rising ground to get a view of his enemy, with whose person he was not acquainted. He summoned to his side a chosen body of knights, all of whom, with the exception of Lord Lovell, perished with him, and he paused to drink at a spring, which still goes by his name. It must have been here, if anywhere, that Catesby, a civilian, called his attention to Sir William Stanley's suspicious movements, and urged him to fly, offering a fresh horse; but there is no authority for making Catesby exclaim to Norfolk, slain an hour ago:

* Grafton, vol. ii. p. 154. Balls of about a pound and a half weight have been dug up on the field, but none of the chroniclers speak of artillery as used by either side.

* "Bosworth Fields," by Sir John Beaumont, Bart., quoted by Mr. Jesse from Weever's *Funeral Monuments*, p. 554.

"Rescue, my lord of Norfolk, rescue, rescue!
The King enacts more wonders than a man,
Daring an opposite to every danger.
His horse is slain, and all on foot he fights,
Seeking for Richmond in the throat of death."

For aught that is known, it was White Surrey that, like Hotspur's roan, was to bear him like a thunderbolt against the bosom of his foe; and it was spear in rest that he dashed amongst Richard's surprised and fluttered body-guard. "Richard was better versed in arms, Henry was better served. Richard was brave, Henry a coward. Richard was about five feet four, rather runted, but only made crooked by his enemies; and wanted six weeks of thirty-three. Henry was twenty-seven, slender, and near five feet nine, with a saturnine countenance, yellow hair, and gray eyes."

Such is Hutton's estimate of the personal prowness of the pair who were now contending for a kingdom. What follows sounds fabulous, unless we bear in mind the reflection with which Scott accompanies his sketch of Claverhouse unhorsing Balfour of Burleigh. "A wonderful thing it was afterward thought that one so powerful as Balfour should have sunk under the blow of a man to appearance so slightly made as Claverhouse, and the vulgar of course set down to supernatural aid the effect of that energy which a determined spirit can give to a feebler arm." We all recollect the Countess of Auvergne's wonder at the sight of Talbot, whom she calls "a weak and writhled shrimp;" and the hero of one of the most spirited feats of arms recorded by Froissart is a humpbacked, little knight, whose head and shoulders only just appeared over his raised saddle-bow. According to Grafton, Richard, so soon as he descried Richmond, "put spurs to his horse, and like a hungry lion ran with spear in rest toward him." He unhorsed Sir John Cheney, a strong and brave knight,* and rushing on Sir William Brandon, Henry's standard-bearer, cleft his skull, tore the standard from his grasp, and flung it on the ground. "He was now," says Hume, "within reach of Richmond himself, who declined not the combat." Others say Richmond drew back, as a braver man might have done in his place—

"No craven he, and yet he shuns the blow,
So much confusion magnifies the foe."

Fortunately for him, Sir William Stanley came up at the very nick of time "with three thousand tall men," and overpowered Richard, who died, fighting furiously, and murmuring with his last breath, *Treason! treason! treason!* So nicely timed was Stanley's aid, that Henry afterward justified the ungrateful return he made for it by saying: "He came time enough to save my life, but he staid long enough to endanger it." Richard received wounds enough to let out a hundred lives; his crown had been struck off at the beginning of the onset: and his armor was so broken, and his features were so defaced, that he was hardly to be recognized when dragged from beneath a heap of slain—

"His hand still strained the broken brand,
His arms were smeared with blood and sand;
Dragged from among the horses' feet,
With dinted shield and helmet beat,
The falcon crest and plumage gone—
Can that be haughty Marmion?"

And can that stripped and mutilated corpse be the crowned monarch who at morning's rise led a gallant army to an assured victory, who had recently been described by a distinguished foreigner as holding the proudest position held by any king of England for a hundred years?* Nothing places in a stronger light the depth of moral degradation and insensibility, fast verging toward barbarism, to which men's minds had been sunk by the multiplied butcheries of these terrible conflicts, than the indignities heaped upon the dead King, with the sanction, if not by the express orders, of his successor. The body, perfectly naked, with a rope round the neck, was flung across a horse, like the carcass of a calf, behind a pursuivant-at-arms bearing a silver boar upon his coat, and was thus carried in triumph to Leicester. It was exposed two days in the Townhall, and then buried without

* "Sir John Cheney, of Shirland, personally encountering King Richard, was felled to the ground by the monarch, had his crest struck off and his head laid bare; for some time, it is said, he remained stunned; but recovering after awhile, he cut the skull and horns off the hide of an ox which chanced to be near, and fixed them upon his head to supply the loss of the upper part of his hemlet: he then returned to the field of battle, and did such signal service that Henry, on being proclaimed king, assigned Cheney for crest the bull's scalp, which his descendants still bear."—*Sir Bernard Burke, Vicissitudes of Families*, p. 350.

* Philip de Commines.

ceremony in the Grey Friars Church. At the destruction of the religious houses, the remains were thrown out, and the coffin, which was of stone, was converted into a watering-trough at the White Horse Inn. The best intelligence that Mr. Hutton, who made a journey on purpose in 1758, could collect concerning it, was that it was broken up about the latter end of the reign of George the First, and that some of the pieces had been placed as steps in a cellar of the inn. "To what base uses we may return, Horatio!" The sign of the White Boar at Leicester, at which Richard slept, was forthwith converted into the Blue Boar; and the name of the street, called after it, has been corrupted into Blubber Lane.

As to the person of Richard, we agree with Buck and Walpole. "The truth," says Walpole, "I take to have been this: Richard, who was slender and not tall, had one shoulder a little higher than the other, a defect by the magnifying-glasses of party, by distance of time, and by the amplification of tradition, easily swelled to shocking deformity." The impression left by a marked personal peculiarity may be unconsciously hightened and transmitted till it becomes inextricably woven into the web of history. Thus Lord Macaulay, a warm admirer of both Luxembourg and William, winds up a brilliant paragraph by the remark that amongst the one hundred thousand men engaged at Landen, "perhaps the two feeblest in body were the humpbacked dwarf who urged on the fiery onset of France, and the asthmatic skeleton who covered the slow retreat of England." The strongest argument in favor of Richard's personal appearance is that drawn from Dr. Shaw's address to the citizens of London preparatory to the usurpation. After contending that the illegitimacy of Edward IV. and Clarence was obvious from their likeness to persons with whom their mother had intrigued, he went on: "But my Lord Protector, that very noble Prince, the pattern of all heroic deeds, represents the very face and mind of the great Duke his father. His features are the same, and the very express likeness of that noble Duke." At these words, the Protector was to enter as if by chance; and although the point was missed by his non-appearance till a few minutes later, such a *coup de théâtre* would hardly have been hazarded if Richard either presented no resemblance or a miniature and caricature one of his father. A Scotch prelate, one of the commissioners for concluding the marriage between Prince James of Scotland and the Lady Anne de la Pole, thus alludes to Richard's stature in his address:

> "He (the King of Scotland) beholds in your face a princely majesty and authority royal, sparkling with the illustrious beams of all moral and heroical virtue."

He had a habit of gnawing his under lip and a trick of playing with his dagger, which, although misconstrued into signs of an evil disposition, were probably mere outward manifestations of restlessness. Polydore Virgil speaks of his "horrible vigilance and celerity." It was the old story of the sword wearing out the scabbard; and the chances are that he would not long have survived Bosworth Field had he come off unscathed and the conqueror.

CAPTAIN JOHN ERICSSON.

The name of Ericsson has become renowned in Naval Architecture. The tremendous conflict between the Monitor and the Merrimac, iron-clad steam-ships, has awakened a deep and perpetual interest in the minds of public men and the governments of the world. The Monitor, invented, constructed, and fitted in all her arrangements and naval armor for the wondrous conflict which has sent her renown over all Christendom, originated in the mechanical genius of Capt. Ericsson.

The achievements of the Monitor, and the principle on which her success depends, have become portions of our national history. A portrait of the man who has thus done honor to the country of his adoption, and furnished such surprising means of defense to the public interests in an hour of extreme peril, can hardly fail to excite curiosity and meet a welcome from the eye which gazes upon its strongly marked lineaments. It is a remarkable face. No one can scan it without a conviction that behind that face lie talent, genius, mechanical invention, and decision of character. The portrait has been accurately engraved, with fine artistic taste, by Mr. George E. Perine, both as an embellishment to this number and to gratify those who admire genius.

A brief biographical sketch will add interest and value to the portrait.

John Ericsson was born in the province of Wermeland, Sweden, in 1803. Being the son of a mining proprietor, his earliest impressions were derived from the engines and machinery of the mines. In 1814, he attracted the attention of Count Platen, the intimate friend of Bernadotte, and being appointed a cadet in the engineers, was employed as a *niveleur* at the Grand Ship Canal, where he set out the work for more than six hundred soldiers. In 1820, he entered the Swedish army as an ensign, and was soon promoted to a lieutenancy. His regiment being stationed in the northern highlands, where an accurate Government survey was in progress, Ericsson surveyed upward of fifty miles of territory, detailed maps of which, executed by his own hands, are yet in the archives of Sweden. In 1826, he obtained a leave of absence for a visit to England, with a view of introducing his invention of a flame-engine, which he had exhibited in a machine of about ten horse-power. This engine did not meet his expectations and involved heavy expenditures, which induced him to resign his commission and devote himself to mechanical pursuits.

Numerous inventions followed, among which may be mentioned the steam-boiler on the principle of artificial draft, for the introduction of which, Ericsson joined the established mechanical house of John Braithwaite. After having been applied to numerous boilers for manufacturing purposes in London with success, effecting a great saving in fuel and dispensing with the huge smoke-stacks, his invention was applied to railway locomotion on the Liverpool and Manchester Railway in the fall of 1829. The directors had offered a prize for the best locomotive-engine, and within seven weeks of the time of trial, Ericsson heard of the offer, planned an engine, executed the working-drawings, and completed the machine. The lightest and fastest engine started on this occasion was the Novelty, which, guided by its inventor, Ericsson, started off at the rate of fifty miles an hour. The principle of artificial draft which characterized this engine, is yet retained in all locomotive-engines; but a different mode of producing it was accidentally discovered so soon after the display of the Novelty, that the original inventor derived no advantage from it. A similar engine of greater power he subsequently constructed for the King of Prussia. For this invention he received the prize medal of the Mechanics' Institute of New-York.

In 1833, he reduced to practice his long-cherished project of a caloric-engine, and submitted the result to the scientific world in London. The invention excited very general interest, and lectures were delivered in explanation and illustration of its principle by Dr. Lardner and by Professor Faraday. Ericsson's attention was next directed to navigation, the result of which was the invention of the propeller, and of that new arrangement of the steam machinery in ships of war which has revolutionized the navies of the world. Ericsson sought to bring these inventions to the favorable notice of the British Admiralty, and was listened to with polite but incredulous attention. He took their lordships on a trial-trip, in a vessel constructed with his new propeller, but he could not induce them to believe what they saw. He found a more confiding listener in Captain R. F. Stockton, of the United States Navy, by whose influence with the administration of that time at Washington, he was placed in a position to carry out his plans.

In 1839, Ericsson came to New-York. In 1841, he was employed in the construction of the United States ship-of-war, the Princeton, on the very plan which had been received with such indifference by the British Admiralty.

She was the first steamship ever built with the propelling-machinery under the water-line and out of the reach of shot.

In the United States division of the Industrial Exhibition of all nations in Lon-

don in 1851, Ericsson exhibited the distance-instrument, for measuring distances at sea; the hydrostatic gage, for measuring the volume of fluids under pressure; the reciprocating fluid-meter, for measuring the quantity of water which passes through pipes during definite periods; the alarm-barometer; the pyrometer, intended as a standard measure of temperature from the freezing-point of water up to the melting-point of iron; a rotary fluid-meter, the principle of which is the measurement of fluids by the velocity with which they pass through apertures of definite dimensions; and a sea-lead, contrived for taking soundings at sea without rounding the vessel to the wind, and independently of the length of the lead-line. For these he received the prize-medal of the Exhibition. In 1852, he was made a Knight of the order of Vasa by King Oscar of Sweden. In the same year he brought out a new form of coloric-engine in the ship Ericsson. He propelled this ship of two thousand tons from New-York to Alexandria on the Potomac, in very rough weather, in the latter part of February, 1853. Ericsson was invited by a committee of the Legislature of Virginia to visit Richmond as the guest of the State. In the midst of numerous mechanical pursuits, Ericsson has since devoted himself to perfecting the coloric-engine. Step by step he has been advancing to admitted success. It is now applied to purposes of pumping, printing, hoisting, grinding, sawing, turning light machinery of various kinds, working telegraphic instruments, and propelling boats. More than two hundred of these engines are in successful operation. Ericsson still labors with the vigor and enthusiasm of boyhood. While engaged in carrying out his inventions, it is a common thing for him to pass sixteen hours a day at his table in the execution of detailed mechanical drawings, which he throws off with a facility and a style that have probably never been surpassed. Thus we found him busy on the day we wrote this for our present number. Such is the man whose portrait embellishes this number of THE ECLECTIC. The main facts of this brief notice we gather from Appleton's *Cyclopedia*, which is a mine of information.

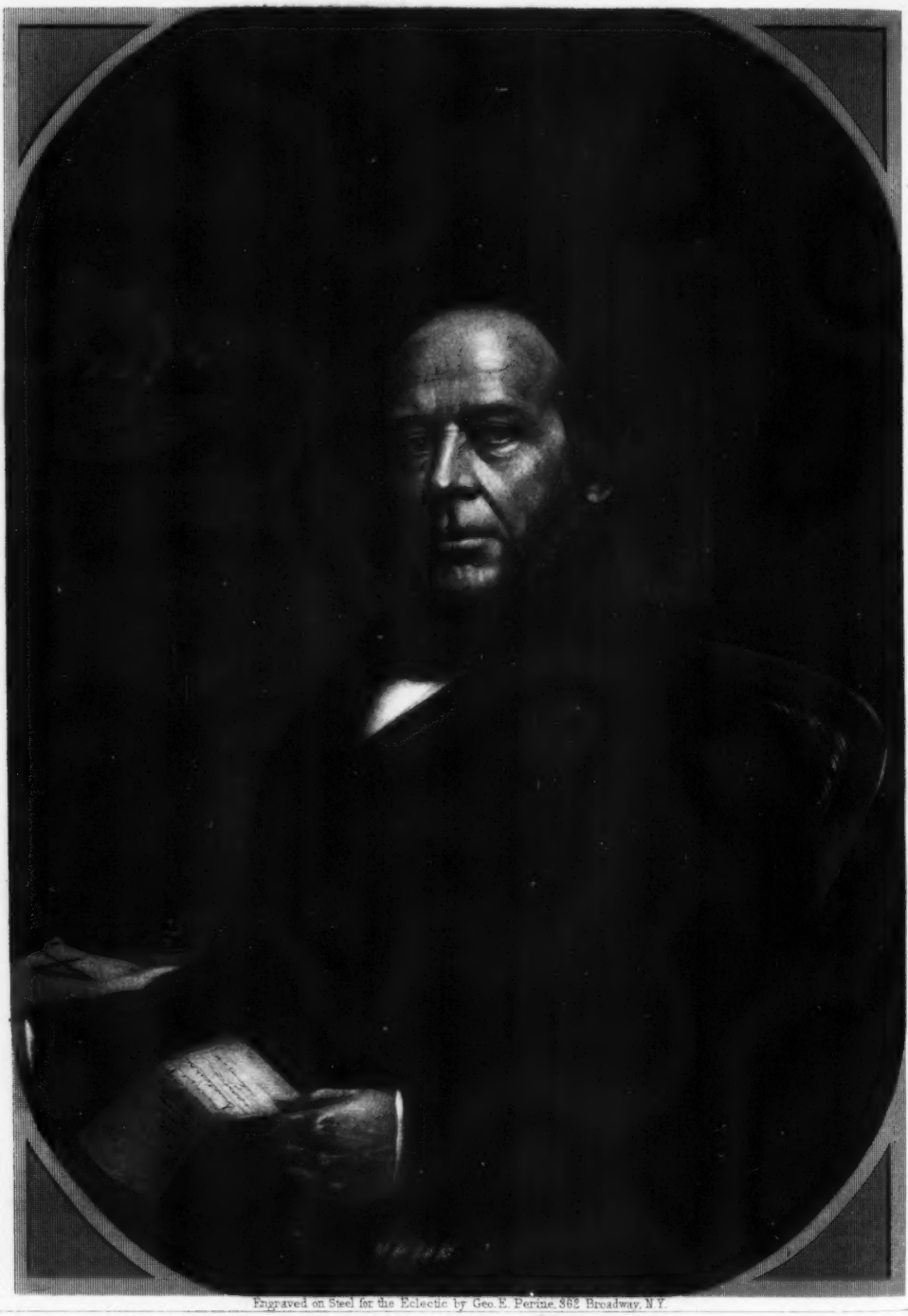
THE EMPEROR NAPOLEON AND CAPTAIN ERICSSON.

IN connection with a portrait of Capt. J. Ericsson, in this number of THE ECLECTIC, it is due to him and to his reputation as a naval inventor to place before our readers the evidence which proves him to have been the original discoverer of the principle on which the Monitor steam-battery was built. The evidence is fully and briefly embraced in the following communication to the Emperor Napoleon III.:

The following is an extract of a communication from the city of New-York to Emperor Napoleon III., at Paris, by J. Ericsson, on the twenty-sixth of September, 1854. The receipt of the said communication was at once acknowledged by his Majesty.:

EXTRACT.

"NEW SYSTEM OF NAVAL ATTACK.—The vessel to be composed entirely of iron. The midship section is triangular, with a broad, hollow keel, loaded to balance the heavy upper-works. The ends of the vessel are moderately sharp. The deck, made of plate-iron, is curved both longitudinally and transversely with a spring of five feet; it is made to project eight feet over the rudder and propeller. The entire deck is covered with a lining of sheet-iron three inches thick, with an opening in the center sixteen feet diameter. This opening is covered by a semi-globular turret of plate-iron, six inches thick, revolving on a column and pivot by means of steam-power and appropriate gear-work. The vessel is propelled by a powerful steam-engine and screw-propeller. Air for the combustion in the boilers is supplied by a large self-acting centrifugal blower, the fresh air being drawn in through nu-



Engraved on Steel for the Eclectic by Geo. E. Perine, 362 Broadway, N.Y.

J. Ericsson

merous small [illegible]. The pro-
ducts of the [illegible] from
the vessel are [illegible] conduct-
ors leading to a [illegible] small holes in
the deck and turret. [illegible] objects
are viewed through small holes at appro-
priate places. [illegible] telescopes, ca-
pable of being protruded or withdrawn at
pleasure, also afford a distinct view of sur-
rounding objects. The rudder-stock pass-
es through a water-tight stuffing-box, so
as to admit of the helm being worked
within the vessel. Shot striking the deck
are deflected, whilst shell exploding on it
will prove harmless. Shot (of cast iron)
striking the globular turret will crumble
to pieces or are deflected. This new sys-
tem of naval attack [illegible] an entire
fleet of sailing-ships, [illegible] and
light [illegible] single craft.
[illegible], will be
impracticable, [illegible], which
turn like the [illegible], command-
ing every point [illegible] at once,
may keep off [illegible] number of
boats by [illegible].

"A fleet at anchor [illegible] fired and put
in a sinking [illegible], before enabled to
get under way.

"Of what [illegible] the 'steam
guard-ships' if attacked on the new sys-
tem? Alas for the 'wooden walls' that
formerly 'ruled the waves.'

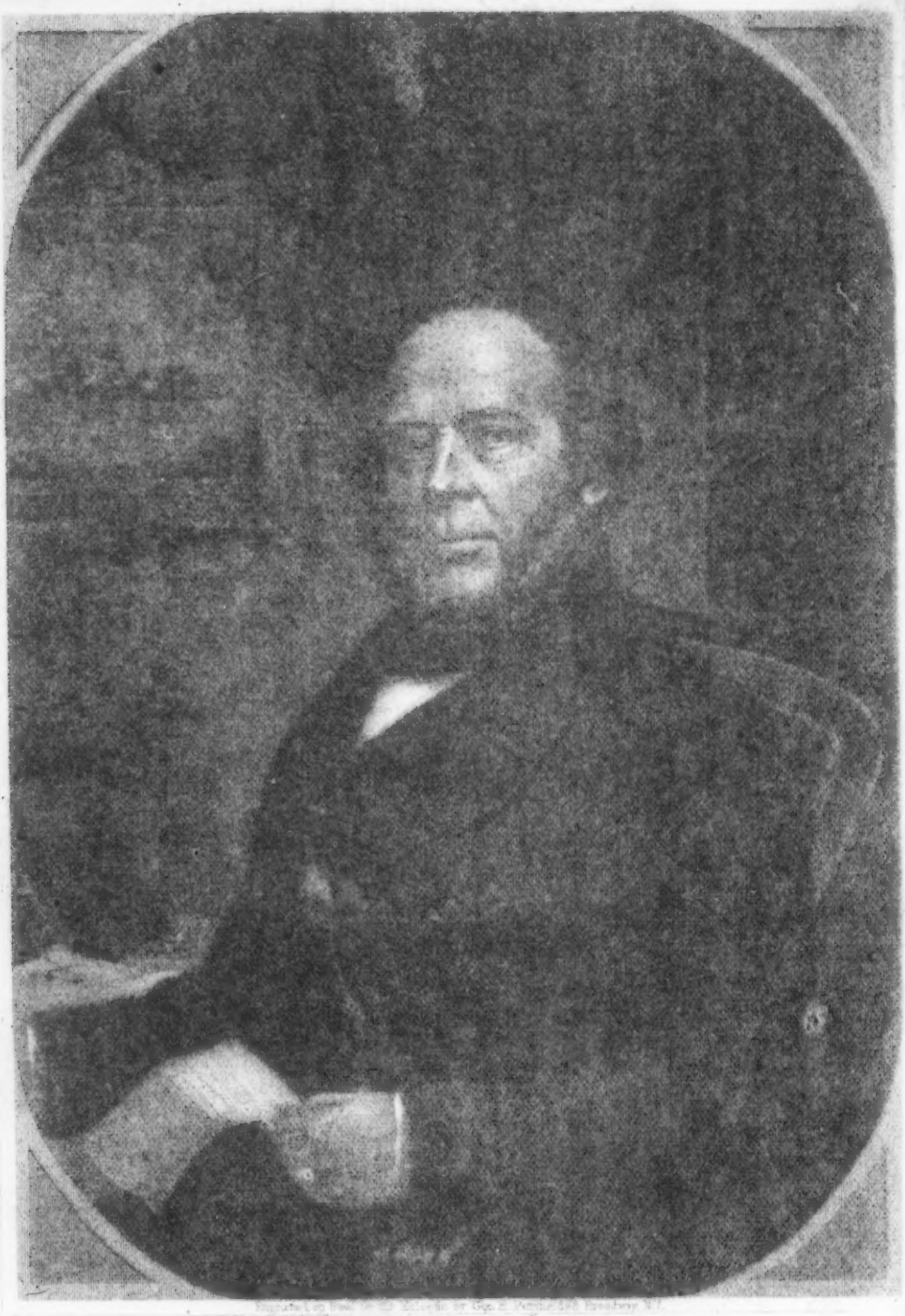
"The long-range [illegible] gun would
scarcely hit the [illegible] turret once
in six hours, and then six chances to one,
its shot or shell would be deflected by the
varying angles of the face of the impreg-
nable globe. [illegible] struck at
right angles, the globe, which weighs up-
ward of [illegible], [illegible] less affected by
the shock than [illegible] by the blow
of a light hammer; [illegible], the shot
would crumble to pieces, whilst the shell
would strew the [illegible] deck with harm-
less fragments.

"During combat the revolving turret
should be kept in motion, the port-holes
being turned away from the opponent
except at the moment of firing; [illegible] which,
however, [illegible] little atten-
tion, as the [illegible]
requires but [illegible].

ABSURDITY OF CAPTAIN COLES'S CLAIM.

Captain Coles states, in a letter to the *Times* of April 5th, 1862, that his expe-rience in the Baltic and Black Seas, in 1855, suggested to him the idea of build-ing impregnable vessels, and that toward the latter part of that year he had "a rough model made by the carpenter of the Stromboli," and that he proposed to protect the guns by a stationary shield or cupola. Captain Coles, it appears, met with no encouragement from the Admi-ralty, and therefore consulted Mr. Brunel, the celebrated engineer, who warmly em-braced the plan. "He did more," says Captain Coles, in his letter to the *Times*; "he assisted me in my calculations, and gave me the aid of his draughtsmen." Captain Coles further states that, not-withstanding official neglect, he persever-ed, and in March, 1859, produced draw-ings of a "shield fitted with turn-tables." Lastly, in December, 1860, Captain Coles published, in *Blackwood's Magazine*, drawings of his "gun-shield and revolving platform," the platform being turned by manual power only.

The information thus conveyed would have been put before the public ere this, but for the supposition that the Emperor of the French would cause to be made known the fact that his Majesty received from Captain Ericsson already, in 1854, plans and description of the revolving cu-pola and shot-proof iron battery here shown.



J. Ericsson

merous small holes in the turret. The products of the combustion and impure air from the vessel are forced out through conductors leading to a cluster of small holes in the deck and turret. Surrounding objects are viewed through small holes at appropriate places. Reflecting telescopes, capable of being protruded or withdrawn at pleasure, also afford a distinct view of surrounding objects. The rudder-stock passes through a water-tight stuffing-box, so as to admit of the helm being worked within the vessel. Shot striking the deck are deflected, whilst shell exploding on it will prove harmless. Shot (of cast iron) striking the globular turret will crumble to pieces or are deflected. This new system of naval attack will place an entire fleet of sailing-ships, during calms and light winds, at the mercy of a single craft. 'Boarding,' as a means of defense, will be impracticable, since the turret-guns, which turn like the spokes in a wheel, commanding every point of the compass at once, may keep off and destroy any number of boats by firing slugs and combustibles.

"A fleet at anchor might be fired and put in a sinking condition before enabled to get under way.

"Of what avail would be the 'steam guard-ships' if attacked on the new system? Alas for the 'wooden walls' that formerly 'ruled the waves!'

"The long-range Lancaster gun would scarcely hit the revolving iron turret once in six hours, and then, six chances to one, its shot or shell would be deflected by the varying angles of the face of the impregnable globe. When ultimately struck at right angles, the globe, which weighs upward of forty tons, will be less affected by the shock than a heavy anvil by the blow of a light hammer; consequently, the shot would crumble to pieces, whilst the shell would strew the arched deck with harmless fragments.

"During contest the revolving turret should be kept in motion, the port-holes being turned away from the opponent except at the moment of discharge, which, however, should be made during full rotation, as the lateral aim in close quarters requires but little precision."

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LITERARY MISCELLANIES.

AMERICAN THEOLOGICAL REVIEW. — The July number of this able *Review* has been laid on our table. Its contents indicate well-filled pages. The first article, by Dr. Hickok, of Union College, on Psychology and Skepticism, replies in detail to the criticisms urged by the *Princeton Review* against his system of philosophy. It is a very thorough examination, showing, among other things, that his opponents have mistaken what Dr. Hickok represents as the objections of skeptics for his own views.

Professor March, of Easton College, on comparative grammar, takes up a sentence of Shakspeare, and discusses it in the light of comparative philology in a very learned and satisfactory manner. The article on the Origin of Idolatry, is an examination of Rawlinson's views, as given in his edition of Herodotus, and shows a wide range of learning. Rev. J. Ambrose Wight, of Chicago, on the Temptation of Christ, brings out in a forcible manner, the analogy between Christ's temptation and our own. The next is a masterly article on "British Sympathy with America," of some sixty pages, from the strong pen of Prof. H. B. Smith, the editor, in which he handles British notions of this country in regard to the rebellion in a manner which must prove very gratifying to the American reader. The article should be extensively read. The article on Presbyterian General Assemblies, by Prof. Smith, will be read with interest and satisfaction by the ministers and friends of both bodies. We are glad to see this article in the pages of this *Review*.

THE CRYSTAL PALACE IN A NIGHT STORM.—We had an opportunity of being inside the Crystal Palace during the violent thunder storm that visited the neighborhood of Sydenham. The novelty of the sights that presented themselves was striking and marvelous. In a moment, from intense darkness the whole building was lit up—every object standing out as bright as in day in all the distinctness of the stereoscope, to which indeed it might be compared, with the additional association of grandeur in its fullest extent. At another time the western end of the center transept assumed the character of a brilliant luminous mass, with a vividness that lightning only possesses—brighter far than the sun. Then, again, the roofs were illuminated, all their beautiful proportions exhibited, and their outlines distinct and dazzling, as though studded with millions of diamonds. Turning to the southern side, we looked out upon the expanse that lay before us; here the scene was magic in its character. From intense darkness flitted at rapid intervals every object, statue, fountain, tree, shrub, terrace, and the distant country to Sevenoaks, in brilliancy that can scarcely be described by language. We never before witnessed any thing so peculiarly beautiful and grand.—*South-eastern Gazette.*

POMPEIAN GLASS.—M. Bontemps, in a memoir read at the last meeting of the Paris Academy, on the squares of glass found in the excavations at Pompeii, raises the question of the manner of their manufacture. The squares measure about eighteen inches by twenty-four inches, and are from an inch to two inches thick. The question raised is, whether they were blown like our common window glass, or cast. M. Bontemps considers the air-bubbles and other features presented demonstrate decidedly that they were simply cast. Samples of the plates have been analyzed by Mr. Frederick Claudet, of London, the son of the eminent photographer, with the following result: Silica, 69.43; lime, 7; soda, 17; alumina, 3; oxyd of iron, 1—97.43, which is very nearly the composition of the glass of the present day.—*London Review.*

REMARKABLE PRESERVATION OF A BIBLE.—During one of the "religious persecutions" in Bohemia an edict was issued, commanding the peasantry to deliver up all their Bibles, for destruction. Various expedients were tried by the Protestants, to preserve their books. One old lady put her Bible in the center of a mound of dough, and baked it. The house was carefully searched, but the dough protected Holy Writ; and when the danger was passed, the Bible was taken uninjured from the loaf. This volume, printed one hundred and fifty years ago, and thus preserved, is still extant, in the possession of a resident of Lucas county, Ohio.

A MUSICAL BRUTE.—In the French court of the Great Exhibition are certain automatic birds and animals, the former of which flutter about and sing most naturally, and the latter of which play on guitars, violins, drums, etc. The hare, which performs on the guitar, is a wonderful creature. He not only thrums the strings, but he winks, moves his nostrils after the manner of hares, opens and closes his eyelids as if in sleepy enjoyment of the music, which, however, is not particularly good.—*London paper.*

HOW MANY BALLS KILL IN BATTLE.—Marshal Saxe, a high authority in such things, was in the habit of saying that to kill a man in battle, the man's weight in lead must be expended. A French medical and surgical gazette, published at Lyons, says that the fact was verified in Solferino, even with the recent great improvements in firearms. The Austrians fired 8,400,000 rounds. The loss of the French and Italians was 2000 killed and 10,000 wounded. Each man hit cost 720 rounds, and every man killed cost 4200 ounces. The mean weight of a ball is one ounce; thus we find that it required on an average 272 pounds to kill a man. The soldier in battle may therefore find comfort in reflecting that 700 shots may be fired at him before he is hit, and 4200 before he "shuffles off this mortal coil."

A MOTHER once asked a clergyman when she should begin the education of her child, and she told him it was then four years old. "Madam," was his reply, "you have lost three years already. From the very first smile over an infant's face your opportunity begins."

TENNYSON'S EXHIBITION ODE.

THE following are the words of Tennyson's Ode sung to Professor Bennett's music at the opening of the International Exhibition in London:

Uplift a thousand voices full and sweet,
In this wide hall with earth's inventions stored,
And praise th' invisible universal Lord,
Who lets once more in peace the nations meet,
Where Science, Art, and Labor have outponred
Their myriad horns of plenty at our feet.

Oh! silent father of our Kings to be,
Mourned in this golden hour of jubilee,
For this, for all, we weep our thanks to thee!

The world-compelling plan was thine,
And, lo! the long laborious miles
Of Palace; lo! the giant aisles,
Rich in model and design;
Harvest-tool and husbandry,
Loom and wheel and engin'ry,
Secrets of the sullen mine,
Steel and gold, and corn and wine,
Fabric rough, or Fairy fine,
Sunny tokens of the Line,
Polars marvels, and a feast
Of wonder, out of West and East,
And shapes and hues of part divine!
All of beauty, all of use,
That one fair planet can produce,
Brought from under every star,
Blown from over every main,
And mixt, as life is mixt, with pain,
The works of peace with works of war.

Oh! ye, the wise who think, the wise who reign,
From growing commerce loose her latest chain,
And let the fair white-winged peacemaker fly
To happy havens under all the sky,
And mix the seasons and the golden hours,
Till each man finds his own in all men's good,
And all men work in noble brotherhood,
Breaking their mailed fleets and armed towers,
And ruling by obeying Nature's powers.
And gathering all the fruits of Peace, and crown'd
with all her flowers.

NEW COMET.—A telescopic comet was detected on December 29th, 1861, at 3 A.M., at Cambridge in the United States. It was independently discovered on January 8th, 1862, by M. Winnecke at St. Petersburg. It was faint when first seen, and became much fainter subsequently. It was at its shortest distance from the sun on December 6th, being then at a little less than the mean distance of the earth from the central luminary. It approached within ten degrees of the pole-star on January 20th. The great comet of July of last year was observed up to January of the present year. Astronomers must wait for the publication of all the observations, before its real orbit and true periodic time can be finally discussed. At present the latter element is doubtful—one calculator (Seeling) making its time of revolution round the sun 419½ years, whilst another (Capocci) concludes it to be 1796 years.

MORE DISCOVERIES IN AUSTRALIA. — Western Australian papers state that Mr. Frank Gregory has just returned to Perth from a six months' exploration of North-Western Australia. He has discovered a country well adapted for the growth of cotton, and numerous pearl-oyster beds. He found in the course of his explorations the sandal-wood tree, and amongst the indigenous fruits was one nearly allied to the monkey bread-fruit, also sweet water melons, gourds, the wild fig, and sweet plum. He also met with palms, the wild tobacco plant, and many rare and beautiful flowers. He likewise discovered a fine harbor under Rosemary and the adjacent islands, which he considers equal to King George's Sound.

PRETTY WOMEN.—Of all other views a man may, in time, grow tired; but in the countenance of woman there is a variety which sets weariness at defiance. "The divine right of beauty," says Junius, "is the only divine right a man can acknowledge, and a pretty woman the only tyrant he is not authorized to resist."

HAYDN AND HIS "CREATION."—The *Creation*, the first of Haydn's oratorios, was regarded as his greatest work, and had often elicited the most heartfelt applause. Now that the aged and honored composer was present, probably for the last time, to hear it, an emotion too deep for utterance seemed to pervade the vast audience. The feeling was too reverential to be expressed by the ordinary tokens of pleasure. It seemed as if every eye in the assembly was fixed on the calm, noble face of the venerated artist; as if every heart beat with love for him; as if all feared to break the spell of hushed and holy silence. Then came, like a succession of heavenly melodies, the music of the *Creation*, and the listeners felt as if transported back to the infancy of the world. At the words, "*Let there be light, and there was light*," when all the instruments were united in one full burst of gorgeous harmony, emotion seemed to shake the whole frame of the aged man. His pale face crimsoned; his bosom heaved convulsively; he raised his eyes, streaming with tears, towards heaven, and lifting upwards his trembling hands, exclaimed—his voice audible in the pause of the music: "Not unto me, not unto me, but unto thy name, be all the glory, O Lord!" From this moment, Haydn lost the calmness and serenity that had marked the expression of his countenance. The very depths of his heart had been stirred, and ill could his wasted strength sustain the tide of feeling. When the superb chorus at the close of the second part announced the completion of the work of creation, he could bear the excitement no longer. Assisted by the Prince's physician and several of his friends, he was carried from the theater, pausing to give one last look of gratitude, expressed in his tearful eyes, to the orchestra who had so nobly executed his conception, and followed by the lengthened plaudits of the spectators, who felt that they were never to look upon his face again.

SEEING WITHOUT "EYES."—"Can a man see without eyes?" asked the professor. "Yes, sir," was the prompt answer. "Pray, sir, how do you make that out?' cried the astonished professor. "He can see with one, sir," replied the ready-witted youth; and the whole school shouted with delight at his triumph over metaphysics.

NEW PLANETS.—Between February 11th and August 13th, 1861, nine new planets were discovered. Since the latter date none have been detected.

A Female Veteran.—The oldest *cantinière* of the French army has died at Issoudun, aged 94 years. Thérèse Jourdan, born at Besançon in 1768, was married in 1783 to Jean Patru, who afterward became a sergeant of the Sixty-ninth brigade. She was with her husband through Bonaparte's Italian campaigns of 1796–7. After that she went to Egypt, and was present at the landing of the army before Alexandria; she was at the battle of the Pyramids, and at Kleber's victory near the ruins of Heliopolis. After her return from the East she accompanied the army to Austerlitz, Jena, Eylau, Friedland, during the campaigns on the Elbe, the Vistula, and the Niemen. She then went to Spain, whence she returned to witness the battles of Essling and Wagram. In 1812 she followed the grand army to Russia, and was at the battle before Moscow, where her husband fell while storming a redoubt. She returned to France with a remnant of that host, taking part in the campaign of 1813, was at Bautzen, Leipsic, and Waterloo. When the army was reörganized she was attached to the Fourth Regiment of the Line, and went with it to Spain in 1823, under the Duke d'Angoulême. From 1830 to 1834 she was in Africa. In 1859 she went there again with the depôt of the Fourth, remaining till 1860. She went to Issoudun with the same corps—allowed a pension by the officers, idolized by the soldiers. Her rations were served out to her as if she was on the strength of the regiment. She retained her faculties to the last, and died without pain.—*Army and Navy Gazette.*

A Grand Monument.—A monument on a magnificent scale to Luther is to be erected at Worms. It is from a design by the sculptor Rietschel. "On a base of forty feet in diameter, in the form of the battlements of a castle—an idea suggested to the artist by Luther's hymn, *Ein feste Burg ist unser Gott*—the colossal bronze effigy of Luther is surrounded by statues of Melancthon and Reuchlin, and the Princes of Saxony and Hesse, his protectors; while close to the statue of Luther, leaning on the pedestal, are placed his predecessors in the work of reformation, Wycliffe and Huss, Peter Waldo and Savonarola. The whole sum required for this monument is £17,000, of which £12,000 has been already collected, during the last three or four years, from almost all parts of the globe. Germany has contributed the greater part of this sum; but all the other countries of Europe—more especially Russia, Sweden, Denmark, and even Iceland—and beyond Europe, North-America, the Brazils, etc., have lent a hand to this work. England alone has not done so." says the circular issued by the Committee of Englishmen who propose to remedy the defect. A distinguished list of names of persons belonging to the committee heads the circular.—*English paper.*

Remarkable Escape.—A carriage accident of a very serious nature took place lately at the Dargle. Lady Laura Grattan, being desirous of viewing the new road formed on the eastern side of this picturesque ravine by Lord Monck recently, proceeded to drive through it in a phaeton, drawn by a single horse, and driven by a careful servant, named Gasson. Feeling some apprehension that this road, which at some points runs above the ravine at an elevation of 200 feet, would not be quite secure, owing to the recent very heavy rains, Lady Grattan descended from the vehicle, at the same time desiring the driver to return. In doing so the earthwork of the road's edge gave way beneath the horse's forefeet, carriage, horse, and driver disappearing in a moment down a terrible precipice of some 150 feet, into the foaming torrent beneath. Most singular to relate, although the horse was killed, and the vehicle smashed to pieces, the driver escaped with a deep cut on the head. Lady Grattan's escape was almost as singular, she having scarcely left the vehicle a moment when the catastrophe occurred. The vehicle itself was a historic relic, the statesman, Henry Grattan, having often driven it about the neighborhood of Tinnahinch in the olden time.—*Dublin Evening Mail.*

How Vast is Crinoline.—The production of crinoline is going on at a flourishing rate in Sheffield. One firm alone sends out no less than twenty tons weekly of the delicate material, whilst the total weekly "make" of the cutlery capital amounts to no less than 150 tons. This rate of manufacture has been maintained throughout the whole of the past winter, and promises to increase as the summer advances. Already enough crinoline has been manufactured at Sheffield to encircle the globe again and again.

Zoölogical.—The earth, air, and sea are peopled with inhabitants, to which systematic zoölogical works may be regarded as so many directories containing their names and addresses. But so numberless are their denizens, that it can be no matter of surprise that many should be overlooked and omitted from the earlier editions; so that a running supplement becomes necessary, to receive the names of new visitors which from time to time reveal themselves to the prying eyes of intruding zoölogists, who scour over untrodden deserts, watch in lonely solitudes, and scrape the bottom of the deep sea, in the hope of bringing to the light of science some retiring creature which has hitherto eluded the inquisitive gaze of the ardent naturalist. Such running supplements are numerous, and are enriched by the labors of workers in many countries and in many departments.

Mechanical Science.—That wonderful work of engineering enterprise, the Mount Cenis Tunnel, is at last making satisfactory progress. Its entire length is to be 7.9 miles, and it presents the peculiar difficulty, that from the immense hight of the mountain above it, no shafts can be sunk, and the whole has to be excavated at two working faces. At the beginning of last year boring machinery was applied, worked by compressed air; it consisted of eight drilling machines, making 200 strokes of 6 inches per minute; 70 holes about 3 feet deep were thus made in the face of the rock in six hours, and four hours were employed in blasting and clearing away the fragments. According to the latest accounts a new steam-machine has been applied, the invention and manufacture of Messrs. Hawkes, Crawshay & Co., resembling a small locomotive engine, and carrying a large wheel on which are fixed a series of steel cutters intended to bore auger fashion into the rock, whilst the fragments dislodged are removed by rakes attached to the machine.

Write your name by kindness, love, and mercy, on the hearts of the people you come in contact with year by year, and you will never be forgotten.